# ENGINEERING NEWS-RECORD

★

★

A McGRAW-HILL PUBLICATION

*The plates used in building a Horton Radial-Cone elevated tank in Lima, Ohio, shown at the left and at the right, were pickled and painted by the Phoscote Process. This means that the steel will not quickly corrode and painted surfaces will stay in top condition much longer. The results—lower maintenance and longer tank life.*

# HORTON ELEVATED TANK TAKING SHAPE IN LIMA

This new 1,000,000-gal. Horton elevated tank is a welcome improvement to modern Lima, Ohio. It marks the beginning of better water service throughout this midwestern city of 65,000—especially in those industrial areas some distance from the central pumping station.

In large cities, low water pressures during peak load periods can be quite serious not only to industrial water customers—but to whole areas in case a fire should break out. That's why many cities like Lima have turned to elevated water storage for help. Elevated tanks erected in strategic locations can relieve most unsatisfactory situations more efficiently and more economically than any other method.

Horton elevated tanks with radial-cone bottoms are built in standard capacities from 500,000 to 3,000,000 gals.

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- Big interchangeable tires for extra traction and flotation.
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two LaPlant-Choate Motor Scrapers on a stripping job near Cedar Rapids, Iowa.

The normal work week of the two TS 300s was 20 hours a day per unit, 6 days a week. Material moved consisted of sandy clay. Hauls started at 500 ft. and gradually lengthened to 1000 ft. as the job progressed. Grades varied, running as high as 30% at the start of the job.

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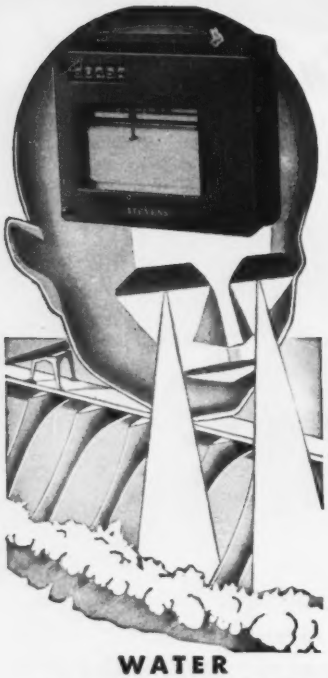

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# ENGINEERING NEWS-RECORD

ABP Member ABC

Volume 148 JANUARY 10, 1952 No. 2

WALDO G. BOWMAN
Editor

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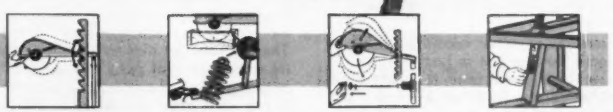

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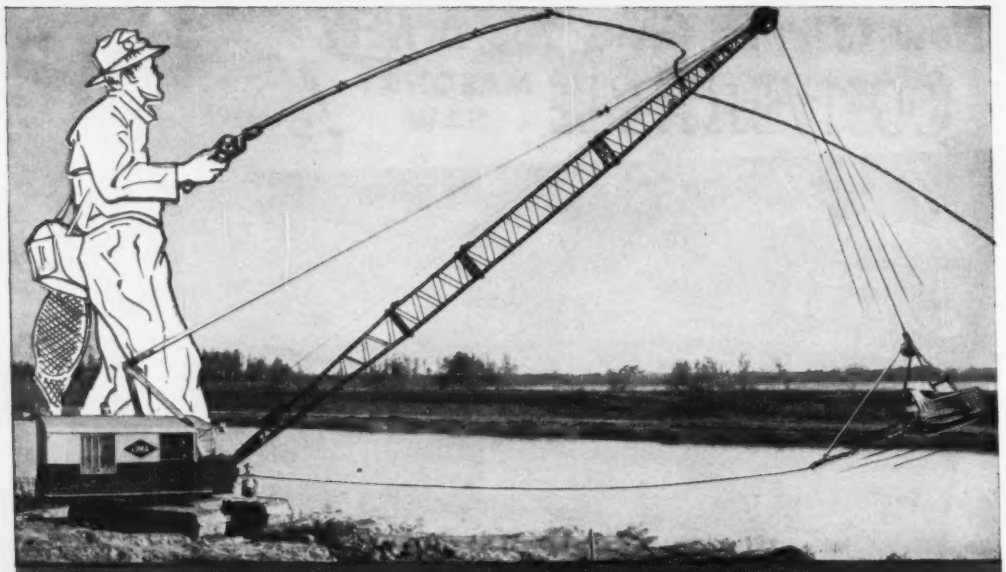
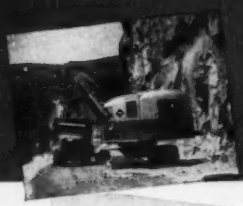


# LIMA DRAGLINES use *The Fisherman's Secret* FOR A GOOD CATCH



When you're fishing, and want to drop the bait in the far pool where the big ones are waiting, your reel's got to be *friction-free* to let that line flow out, smooth as cream from a jug. And, after the strike, come in the same way.

When you're after record yardage, a smooth flowing line is just as vital . . . so we took a tip from the fisherman, and made our reels friction-free. You can 'cast' the dragline bucket further, increase your radius of efficient operation from each location. You can bring in bigger catches, because more power is going into the work lines and less into *friction drag on the machinery*. And there's further big benefits from reduced maintenance . . . less frequent lubrication, and smoother operation, because misalignment from bearing wear, that affects clutch alignment and functioning, is eliminated.

Lima pioneered the use of anti-friction bearings at all important bearing points on draglines, shovels, and cranes. They've kept on pioneering with other improvements that put Lima equipment in the top rank of profitable performers. If you want proof of this—just ask the Lima user. If you want details on how to put Lima equipment on your *pay-off* roll . . . just get in touch with us.

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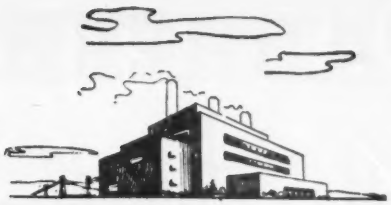
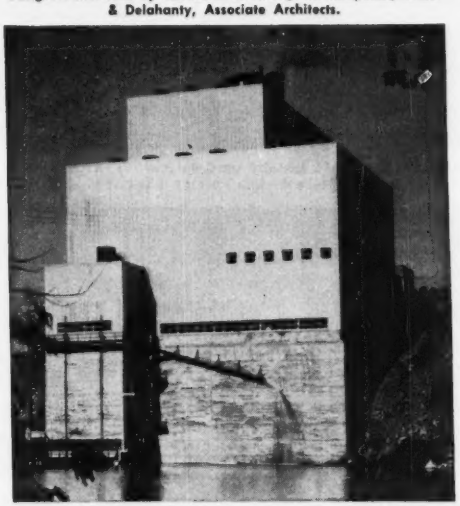


# PERFECT FOR POWERHOUSES

# Q-PANELS

Northern Virginia Power Co., Riverton, Va.
Designed and built by Sanderson & Porter, Inc. Chapman, Evans & Delahanty, Associate Architects.



Every feature of a Q-Panel is a desirable feature for powerhouse construction . . . which explains why Q-Panels have captured the powerhouse market.

Q-Panels go up fast—50 sq. ft. in 9 minutes. A small crew quickly attaches the panel to the steel framework. Little blocks don't pile up fast. *It's much quicker to hang a wall than to pile it up.*

Q-Panels provide a maintenance-free exterior; they are available in a variety of materials for exterior finishes, depending on their availability at time of ordering.

A Q-Panel is an insulated metal sandwich, only 3″ thick but with insulation value greater than a 12″ masonry wall.

The striking fluted surface of Q-Panels is now a familiar sight on powerhouses from coast to coast.

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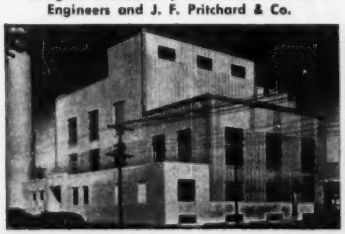
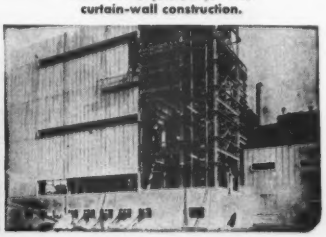


Tennessee Valley Authority Watauga Project
Elizabethton, Tenn.

Note clean, quick, dry, safe, curtain-wall construction.



# FABREEKA

## *Mountings for 900-ton TWIN VIADUCTS on the C&O Ry.*

### PROTECT BOTH CONCRETE and STRUCTURE

The Viaduct over West Fork is 176′ high and 850′ long. Viaduct over Arnold Fork is about the same height and 701′ long. Towers, consisting of four supports 50′ apart, are spaced at 100′ intervals beneath the span.

Fabreeka Pads, 41″ x 41″ x ½″, are installed beneath the 4 inch steel pedestal bases to separate and equalize the bearing surfaces of concrete and steel, and to seal out weather. The abutments are equipped in the same way, but with smaller FABREEKA Pads measuring 19″ x 39″ x ½″.

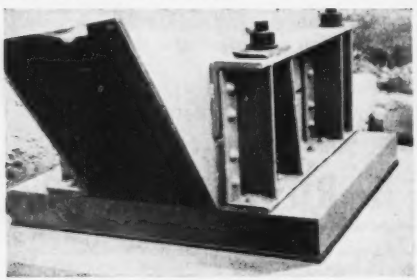
FABREEKA Mountings are used on this 850′ viaduct on the Chesapeake & Ohio Railway over the West Fork in Kite, Ky.

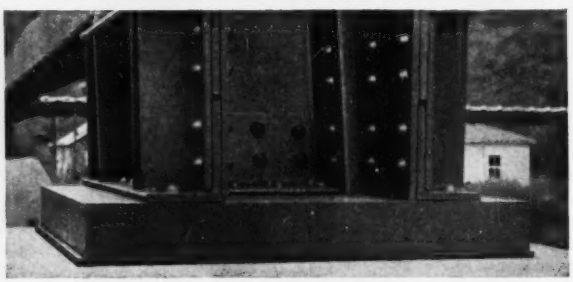
FABREEKA Mountings are also used on this 701′ Arnold Fork viaduct on the Chesapeake & Ohio Railway, likewise in Kite, Ky.

### FABREEKA Pads Insure Even Distribution of Load

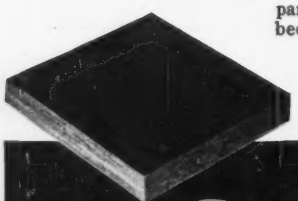
FABREEKA Pads beneath the steel columns adjust themselves to the bearing surfaces of the concrete foundations, insure even distribution of the load, and eliminate grouting.

FABREEKA Bridge Pads absorb impact shock and vibration and prevent flaking and cracking of the concrete foundations.





Fabreeka Bridge Pads are an essential part of modern bridge construction because of their proved accomplishments and long life.



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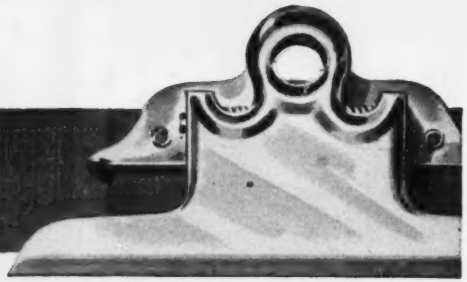

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- Perlite Institute approval

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With Rex® Pumpcrete®—concrete by pipe line—you have a real pipe line to lower costs—and hence higher profits. It's the pipe line *flexibility* that makes Pumpcrete the ideal method of concrete placement on so many large building construction jobs. Just spot the Pumpcrete in the one most advantageous position and extend the pipe line to the desired placement positions.

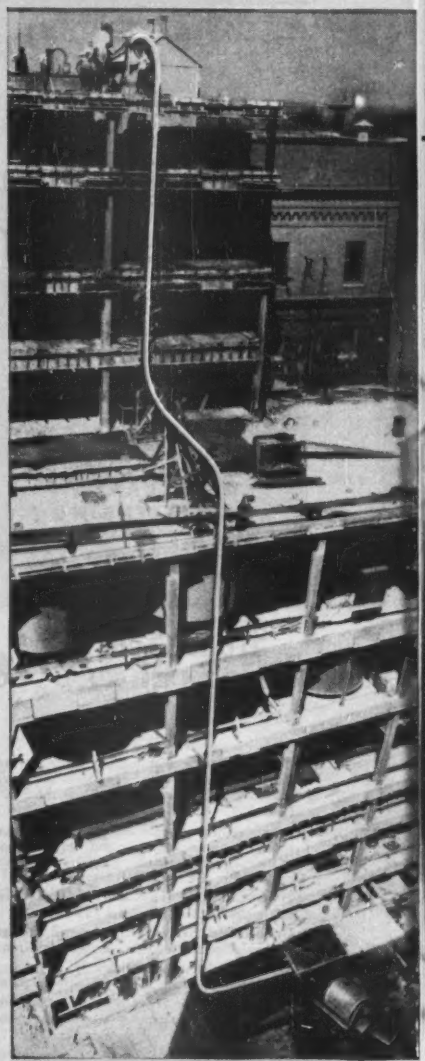
**YOU SAVE FOUR WAYS:**

**FOURTH** **YOU REDUCE NON-PRODUCTIVE MOVING TIME** With Pumpcrete you don't waste time and money moving mixing equipment from place to place. Just spot Pumpcrete in the one most advantageous location. No buggies, buggy runs or other heavy equipment to move. With Pumpcrete, you move placing equipment from floor to floor in as little as 15 minutes.

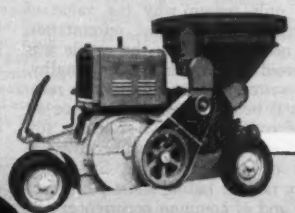
**THIRD** **YOU REDUCE "DEAD TIME"** With Pumpcrete, you place concrete while carpenters, form setters, electricians, plumbers are at work. Concrete is delivered steadily where and when you want it without interference.

**SECOND** **YOU REDUCE PREPARATORY COSTS** Pumpcrete and pipe line flexibility eliminate trestling, scaffolding, towers, expensive buggy runs and their costly re-handling.

**FIRST** **YOU REDUCE DIRECT LABOR COSTS** With Pumpcrete you transport, elevate and place concrete in one operation. No buggying is needed.



*Nine stories high . . . 160 feet up! That's how high the Rex Pumpcrete lifted the concrete on this building job. Pumpcrete is ideal for pouring floors on buildings many stories high. As one floor is completed, the pipe line is extended to the next in as little as 15 minutes.*

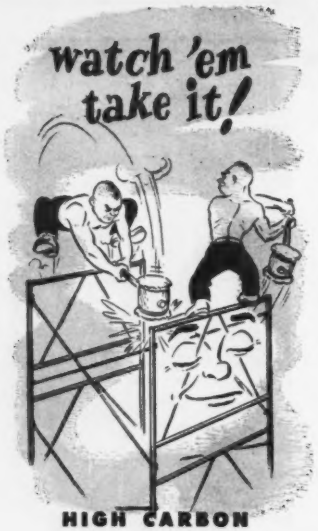


No matter how small or how large the area of each individual floor, pipe line flexibility pays off for you. For the complete story on how you can put up buildings for less with Rex Pumpcrete, see your local Rex Distributor or write to:

CHAIN BELT REX COMPANY

CONSTRUCTION MACHINERY

**Chain Belt Company, 4633 W. Greenfield Ave., Milwaukee 1, Wis.**

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# READER COMMENT

## Control of floods

Sir: "How good is Flood Control" by Gerard H. Matthes, in your issue of Nov. 8, p. 30, is just the type of masterly survey of a vital current engineering problem which your consistent readers have always associated with Engineering News-Record. It is good to think that men such as Mr. Matthes can distill their long experience into such clear and helpful statements.

One question only arose during my own study of this fine article. On page 33 Mr. Matthes says: "The only effective methods for controlling floods are by means of large storage reservoirs and by . . . floodways."

Does Mr. Matthes discount entirely the effect—if only of minor degree—of watershed control and reforestation? I know that excessive claims have sometimes been made for the contribution of vegetation in flood control but can it be discounted entirely?

ROBERT F. LEGGET
*Ottawa, Ont.*

Sir: The article "How Good is Flood Control?" in the Nov. 8 issue seems to have omitted any consideration of the soil conservation program as a function of flood control. Frankly, engineering thinking on flood control seems to be anything but complete. And many of the exponents seem to ignore the importance of silt control in any flood control project. The Soil Conservation Service has done some excellent pioneering in Oklahoma in demonstrating how drainage areas can be treated to delay run-off and conserve soil washing, yet Mr. Matthes makes no mention of this.

DON V. PURINGTON
*Houston, Texas*

Sir: The question raised by Mr. Legget and Mr. Purington as to whether the writer discounts entirely the effects of watershed control and reforestation, is answered as follows: The only reason why the value of watershed control and reforestation was not discussed in the article was to avoid making it unduly lengthy. The writer considers both these measures as being of great importance on three counts: (1) For holding soil in place; (2) for reducing excessive rates of runoff resulting from very heavy rainfall lasting short periods of time and of common occurrence; (3) for the replenishing of ground water. But watershed control and reforestation cannot increase retention or infiltration beyond their natural rates. When these rates are exceeded, as happens during long continued or recurrent heavy rains, surface runoff, whether from forested or from unprotected areas, is bound to build up gradually to the same rate as that at which the rain falls. A well-known instance was observed in the Miami River valley of Ohio in 1913.

And this appears to have been true even in the days of the primeval forest, judging from the fact that the great floods that occurred in the earliest days of settlement in North America were fully as severe as the greatest floods of to-day. The extraordinary floods of 1762 and 1763 mentioned in the article, and similar early floods in California observed by the Padres, are examples which prove that nature's original vegetal cover did not prevent high flood runoff.

GERARD H. MATTHES
*Consulting Hydraulic Engineer*
*New York*

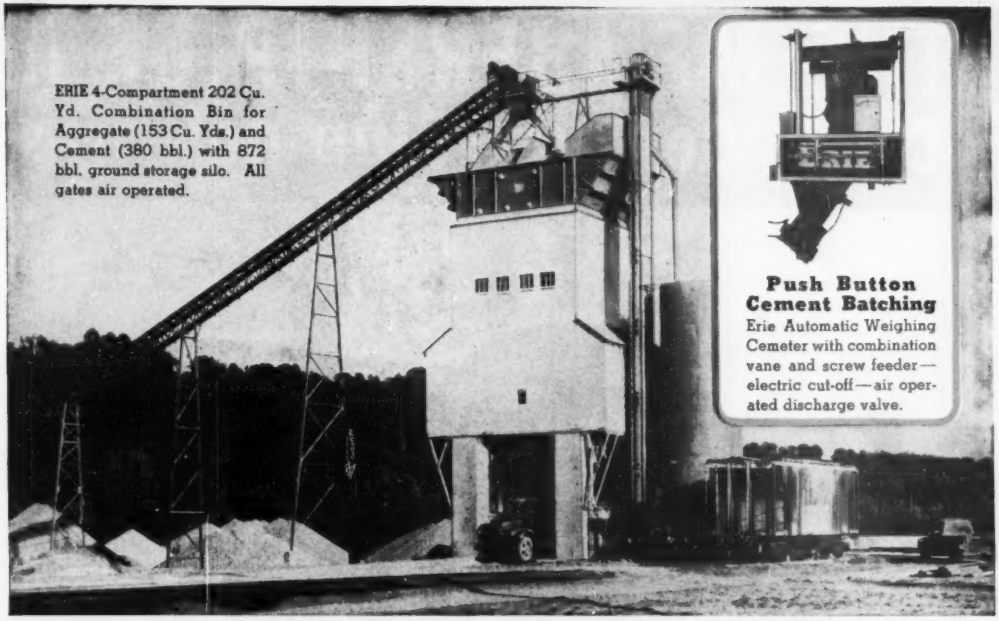
## Unfortunate oversight

Sir: My attention has been called to an interesting anonymous article on page 34 of your issue of Nov. 8, entitled "DIAGRAM SIMPLIFIES NETWORK-FLOW PROBLEM." In this article reference is made to your issue of Oct. 1, 1936, p 475.

If you will refer to that page in your Oct. 1, 1936, issue you will see that the article was written by Prof. James J. Doland. The credit in your recent article, should have mentioned his part in the interpretation of Professor Hardy Cross' method.

It might be a matter of interest to you, as it is to the friends of Professor Doland, to know that the so-called Cross Method for the analysis of waterworks distribution systems was a result of collaboration of Professors Cross and Doland. The latter, who was active in waterworks matters at that time, presented the problem to Professor Cross. Professor Cross found the solution. His solution was published as a Bulletin of the Engineering Experiment Station of the University of Illinois, and simultaneously with the appearance of the Bulletin, Professor Doland's interpretation and explanation was published in ENR. Because of the close relationship between the two men the method was originally announced as the Cross-Doland Method. It is unfortunate, from the viewpoint of those acquainted with the development of the

(*Continued on page 14*)



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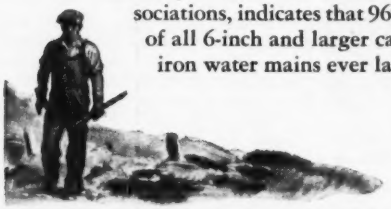

in 25 representative cities are still in service. And when answers to a questionnaire, mailed to gas officials in 43 large cities, show that *original* cast iron mains are still in service in 29 of the cities.

If your records show a cast iron main in service, laid a century or more ago, the Club invites you to send for a handsome framed Certificate of Honorary Membership. Address Thomas F. Wolfe, Recording Secretary, Cast Iron Pipe Century Club, Peoples Gas Bldg., Chicago 3, Illinois.

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**BOSTON CONSOLIDATED GAS CO.**
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**FALL RIVER GAS WORKS COMPANY**
Fall River, Massachusetts
**CITY OF FREDERICK WATER DEPT.**
Frederick, Maryland
**GAS DEPARTMENT**
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**PUBLIC SERVICE COMMISSION**
City of Halifax, N. S., Public Water Supply
**THE HARTFORD GAS COMPANY**
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**BUREAU OF WATER**
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**LOUISVILLE GAS & ELECTRIC CO.**
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Richmond, Virginia
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*8 new members in 1951

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Low first cost
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Hoe digs to 14' depth without hand trim.
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(Continued from page 10)
method, that credit is so infrequently given to Professor Doland. Your article is a flagrant example of such continued oversight.

H. E. Babbitt
*Professor of Sanitary Engineering*
*University of Illinois*

## Prestressing courses

Sir: I have read the comments by Prof. George Winter of Cornell University on Jacob Feld's letter, "Watchmaking Prestressing" (ENR Oct. 11, p. 48), and note with interest his statement, "The basic principles of mechanics as they apply to prestressed concrete are simple and can be explained in outline in one or two lectures" (ENR Nov. 1, p. 65).

Being of the opinion that all new developments in a subject should be included, I started four years ago to include one two-hour lecture on prestressed concrete. This was increased to two two-hour lectures the following year. However, interest in this topic was so encouraging that during the following years, four sessions were assigned to this subject.

Repeated requests for lectures on prestressed concrete have convinced the writer that: (1) It is important and necessary to include the theory on prestressed concrete in any course on reinforced concrete. (2) At least four two-hour sessions are needed. (3) There is not enough practical knowledge of the subject to give it as a separate course.

This writer has had access to all books and articles published on this subject, has studied from the beginning, has discussed it with leading authorities and would like to register the following observations:

(1) When a slab or a beam becomes too shallow, the deflection will be excessive.

(2) By prestressing, the tensile steel will not always be chemically protected by the concrete. Thus, the reinforcement might be attacked by moisture and eventually rust away. This will be especially true of thin wires subject to high tension stresses.

(3) A prestressed structure will carry sound like a drum.

(4) Heat, creep, shrinkage, elastic deformations, small slips of the holding devices and plastic flow tend to reduce the prestress of the steel. Thus W. Granville, in his book, "Modern Concrete Construction," states that total loss on prestress might be as high as 30,000 psi.

Odd Albert
*Associate Professor*
*Department of Civil Engineering*
*Polytechnic Institute of Brooklyn*
*Brooklyn, N. Y.*

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# *Carloads* OF CLAY PIPE used in defense expansion at North Haven, Connecticut

Wherever the nation's defense program calls for expansion, Clay Pipe is in demand. Its protection is inherent in the pipe — can't chip off, squash out, or wear away, because Clay is *completely* safe — inside and outside, top and bottom, through and through. Without it, essential construction would be slowed to a standstill, and our cities would be ravaged by sickness. It's the *only* chemically inert pipe unaffected by sewer gases — the only proved-by-performance pipe that *can't wear out.* Be sure to specify it on all your jobs.

*In the defense expansion program caused by the building of Pratt & Whitney's huge new aircraft engine plant, North Haven, Conn., over 15,000 feet of Vitrified Clay Pipe were installed. The new lines connect into the expanded municipal sewerage system, assuring corrosion-proof, never-wear-out service for this vital defense area.*

**NATIONAL CLAY PIPE MANUFACTURERS, INC.**

311 High Long Bldg., 5 E. Long St., Columbus 15, Ohio
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**Wherever Reliable, Performance-Proved Pipe Is Needed, Specifications Call for Vitrified Clay**

| | |
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| Rantoul, Ill. (Chanute Field) | 158,000 ft. |
| Orlando, Fla. (Air Force Base) | 74,000 ft. |
| Morrisville, Pa. (New Steel Defense Plant) | 300,000 ft. |
| Rapid City, S. D. (Air Base) | 54,000 ft. |
| Eynon, Pa. (Gun Fire Control Plant) | 120,000 ft. |
| Marion, N. C. (Municipal Expansion) | 32,000 ft. |
| Needles, Calif. (Essential Ore) | 87,000 ft. |
| Tucson, Ariz. (Air Base and Defense Plant) | 440,000 ft. |

*Vitrified*
CLAY
CLAY PIPE NEVER WEARS OUT!
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**100 cfm more air, 40% more footage**

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**Model 125 runs 5 hp Ka-Mo**

To cut pipe tunnel at Marion, Ohio, George J. Igel & Co. needed 110 cfm at 100 psi to run their Ka-Mo drill. A Jaeger Model 125 did the job easily after a 105 ft. unit tried and failed.

**3 guns instead of 2 (50% more work)**

With the Jaeger 75 (instead of an "old standard" 60) Surface Coverings Co., San Antonio, Tex., works 3 spray guns instead of 2. Each gun uses 25 cfm of air.

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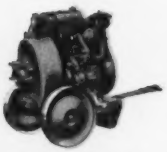

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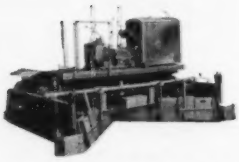
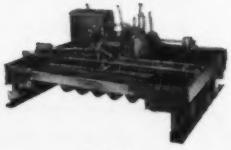
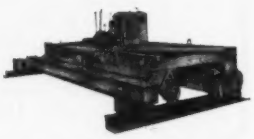


*Paver-Type Aggregate Spreaders*

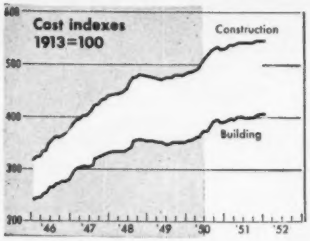


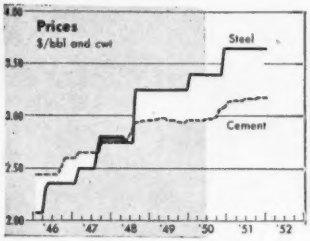
*Concrete Screw-and-Screed Spreaders*

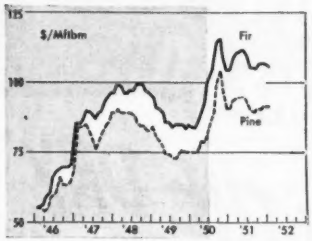


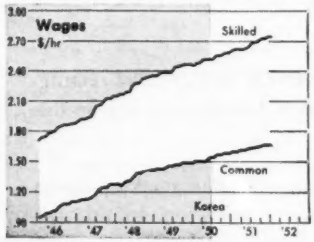
*Diagonal Screed Finishers*

# JANUARY CONSTRUCTION SCOREBOARD



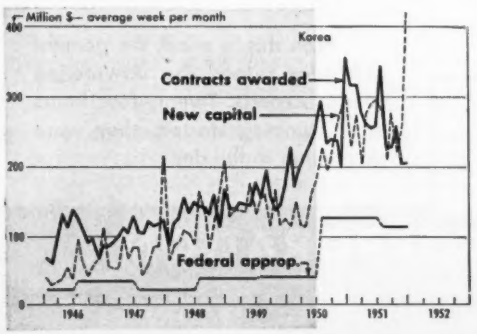



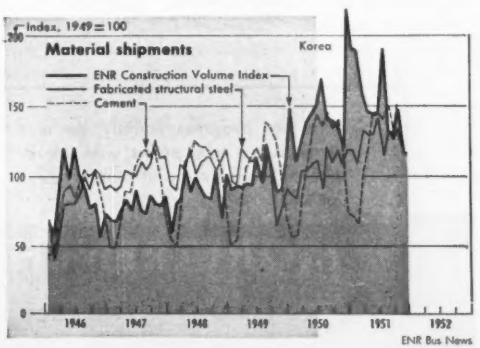

| ENR INDEXES (1913 = 100) ● | 1952 January | % Change from last Month | % Change from last Year |
|---|---|---|---|
| Construction Cost | 547.83 | +0.02 | + 2.9 |
| Building Cost | 405.62 | +0.01 | + 3.2 |
| **MATERIAL PRICES ●** | | | |
| Cement, bulk, per bbl | $3.173 | +0.1 | + 1.5 |
| Structural Steel, (3-mill aver.), per cwt | 3.650 | 0.0 | 0.0 |
| Sand, per ton | 2.101 | 0.0 | + 1.3 |
| Lumber, 2x4 Fir, per M. ft. bm | 105.653 | −1.1 | + 1.2 |
| Lumber, 2x4 Pine, per M. ft. bm | 91.666 | −0.07 | + 1.2 |
| Common brick, per M | 31.114 | 0.0 | + 2.7 |
| Ready-mixed concrete, per c. y | 10.892 | −0.1 | + 1.2 |
| Structural Clay Tile, 3x12x12 per M | 149.850 | +0.1 | +10.4 |
| **WAGE RATES ●** | | | |
| Common | $1.654 | +0.1 | + 4.3 |
| Skilled (aver. 3 trades) | 2.758 | +0.2 | + 5.9 |
| Bricklayers | 3.069 | 0.0 | + 6.4 |
| Structural Ironworkers | 2.697 | +0.2 | + 5.7 |
| Carpenters | 2.507 | +0.4 | + 5.3 |

| CONTRACTS AWARDED (Millions) | 1951 Dec. | 12-Mo. | % Chg. from '50 Dec. | 12-Mo. |
|---|---|---|---|---|
| Total U. S. (ENR reported) | $829 | $13,605 | −41.8 | + 10.1 |
| Private | 502 | 7,438 | +44.0 | + 11.5 |
| Public | 327 | 6,167 | −69.6 | + 8.5 |
| Federal | 106 | 2,246 | −86.4 | + 18.4 |
| ENR Volume Index, '13 = 100 | 404 | 522 | −46.7 | + 3.7 |
| **NEW CAPITAL (Millions)** | | | | |
| Total | $1,237 | $16,572 | +75.9 | + 83.5 |
| State & Municipal Bond Sales | 376 | 3,602 | +31.9 | + 15.4 |
| Corporate Security Sales | 826 | 3,012 | +97.6 | + 17.7 |
| Federal (non-federal work) | 35 | 547 | ..... | + 4.7 |
| Federal (federal work) | ..... | 9,411 | ..... | +232.6 |

| MATERIAL SHIPMENTS & LABOR SUPPLY (Millions) | 1951 Oct. (O) Nov. (N) | 10-Mo. (10) 11-Mo. (11) | % Chg. from '50 Mo. | Yr.-Cum. |
|---|---|---|---|---|
| Cement, bbls, Bu. of Mines | 18.001(N) | 229.518(11) | − 9.1 | + 6.5 |
| Fabr. Struc. Steel, tons, AISC | 0.218(N) | 2.497(11) | +12.3 | +21.0 |
| Lumber, mil. ft. bm., NLMA | 3.412(O) | 31.951(10) | − 4.0 | − 4.8 |
| Lumber Prod., mil. ft. bm., NLMA | 3.514(O) | 33.423(10) | − 4.7 | + 1.2 |
| Contract Constr. Employ., BLS | 2.637(N) | †2.571(11) | + 2.5 | + 0.07 |

● (20-cities' average) † Average




ENR Bus. News

# STEEL PLANT EXPANSION SPEEDS AHEAD.... "IN THE DRY"

*Pumping Contractor:*
*American Dewatering Corporation, New York*

**From January to October 1951, MORETRENCH WELLPOINT EQUIPMENT has been pumping steadily, keeping various foundations dry on this vast expansion project in the mid-west.**

**Ten feet of water in sand, hardpan and rock — limited working space — a tight construction schedule — made efficient pumping on this job imperative.**

**With this in mind, the general contractor turned the dewatering over to experts. Twenty-four hours after pumping started, they were excavating in the dry.**

***Plan to progress rapidly on wet work when you pump with Moretrench. It's a time and money saver on every job.***

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# EDITORIALS

## Zoning laws under test

A COURT TEST of the extent to which federal laws take precedence over local zoning ordinances has been started in New York State. It centers around refusal by the suburban town of Rye to permit the Transcontinental Gas Pipe Line Corp. to build a compressor station in a high-class residential zone as part of a 35-mile extension of the company's natural-gas line through Westchester County. The outcome of this local controversy is certain to have national significance.

The pipe-line company has sought a federal-court injunction against enforcement of the town's zoning law on two grounds: First, that the right of eminent domain granted to it by the Federal Power Commission under the Natural Gas Act is superior to local laws; and second, that the town's attempt to keep it from building the booster station in a high-grade residential section constitutes illegal interference with interstate commerce.

Granting of a permanent injunction on either of those grounds could have a far-reaching effect. For example, using such a precedent, a power company, a railroad, or even an interstate trucking company could build anything it wishes at any place regardless of local laws. In fact, considering the way in which our courts, as part of the administration of federal labor laws, have broadened the scope of the term "interstate commerce" to include even the operators of elevators in office buildings, a large majority of businesses could claim exemption from local building codes or zoning laws.

The superiority of federal laws over local zoning and building regulations has been asserted and maintained in two instances in the past, but under war emergency conditions. In 1944, the U. S. Circuit Court of Appeals held that the Federal Works Administration could build houses for war workers in Chester, Pa., without regard to local building regulations; and in 1947 the New Jersey Court of Errors and Appeals made a similar finding concerning a housing project of the National Housing Agency in Long Branch, N. J.

In another instance, when Arizona undertook to require the Secretary of the Interior to secure approval by its state engineer of the plans and specifications for Boulder Dam before proceeding with construction, the U. S. Supreme Court held that if Congress had the power to authorize construction, the Secretary was under no obligation to seek approval of its plans by the state of Arizona.

In the present controversy at Rye, however, there is no federal act authorizing the construction of a booster station at a particular site. The pipe-line company was granted limited powers of eminent domain under the general provisions of the Natural Gas Act in order that its project could not be blocked by a landholder refusing to give it a right-of-way for its line for reasonable compensation. It does not appear probable that Congress, in granting those powers of eminent domain, intended that they should be extended to make possible the construction of gas storage or processing plants in a residential district or close to a school or hospital. However, that is to be determined.

In any event, in view of the importance of the issues involved, this case is one that should end up in the U. S. Supreme Court.

## Less chaos in steel

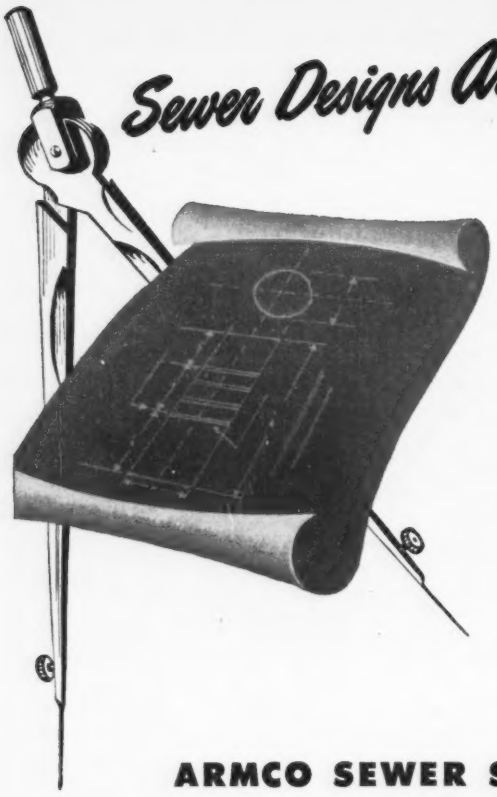
THE YEAR JUST STARTING is not the one when construction steel is going to be plentiful again, but it should chalk up a more creditable record than 1951. This will come about through more orderliness in governmental allotment of the available supplies, signs of which are already apparent.

The most promising development is the acceptance by DPA of a suggestion by the steel industry that a special group be set up to analyze requests for steel to see that they are reasonable as to quantity and timing. The mere existence of this group has had the effect of causing claimant agencies to be more realistic in their requests. It will also provide a watchdog service to DPA in seeing that priorities are promptly honored. This latter was reflected in the substantial 1952 first quarter allotments of structural steel for machine tool plants. Confusion and lack of planning had previously caused the needs of this key defense industry to be overlooked or minimized.

Another good sign is the growing awareness of the scrap problem on the part of consumers of steel, including construction contractors. An increased flow of scrap back to the mills will assure maximum production of new steel. It is also important to note a resolve on the part of government officials to reduce the steel-take by non-defense consumer durable goods, perhaps including passenger cars. Finally, officials seem to be giving more sympathetic attention to recommendations of the Construction Industry Advisory Committee, such as the one asking that construction projects once approved be promised their entire steel requirements instead of only their allotments by quarters.

These trends offer little in the way of encouragement to those classes of construction that are not related to the defense buildup, but they do promise less chaos in steel. That will aid planning even by those who can't get the steel that they would like to have. For defense construction, it should mean fewer delays in the procurement of the steel to which it is entitled.

# *Sewer Designs Are No Good...* on paper!



The best of sewer designs are of little value until they are incorporated into a functioning conduit. Even then the conduit must have adequate strength and material durability to maintain your specifications throughout its normal life. This is why many experienced engineers are specifying Armco Corrugated Metal Sewers.

Consider the importance of structural strength. The designed value of any sewer will change unless it retains grade and alignment, has tight joints to prevent infiltration of ground water and solids, as well as material strength to withstand the impact and vibration of heavy traffic.

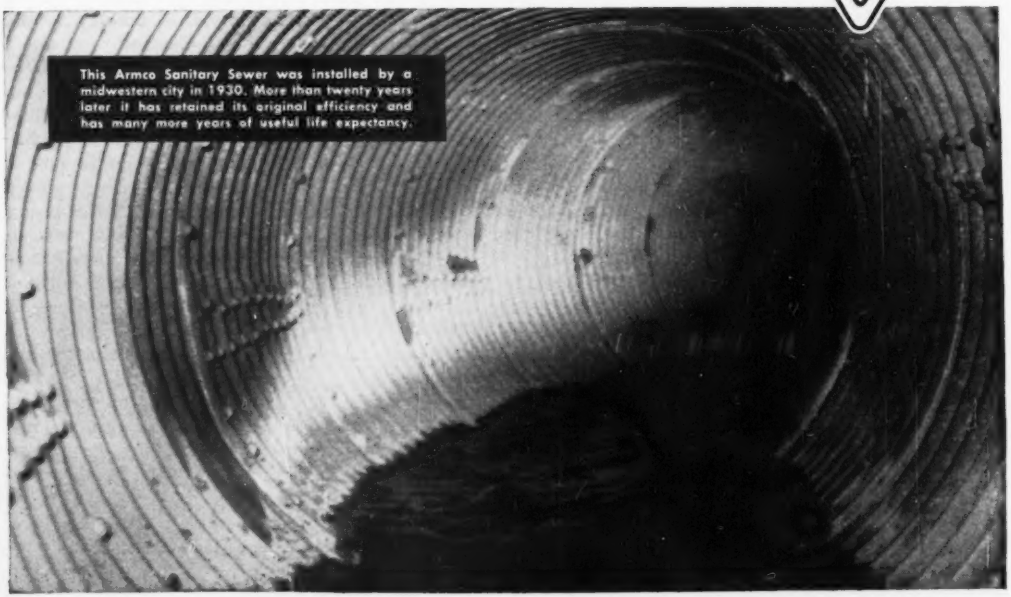
Armco Sewers meet these requirements. Long lengths help bridge soft spots in the foundation. Sturdy coupling bands assure tight joints and a continuous conduit of uniform strength that will not open up or pull apart. The proved strength of flexible corrugated metal design is assurance against crushing or cracking.

And no matter what service conditions are encountered there is a type of Armco structure to meet the exact requirements. Erosion is handled by Armco PAVED-INVERT Pipe. For severe corrosive conditions there is durable ASBESTOS-BONDED. Easily erected MULTI-PLATE is ideal for large structures and either Standard Corrugated or MULTI-PLATE PIPE-ARCH will save time and money when headroom is limited.

Write for complete information regarding your specific needs. Armco Drainage & Metal Products, Inc., 1172 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. Export: The Armco International Corporation.

## ARMCO SEWER STRUCTURES

ARMCO



This Armco Sanitary Sewer was installed by a midwestern city in 1930. More than twenty years later it has retained its original efficiency and has many more years of useful life expectancy.

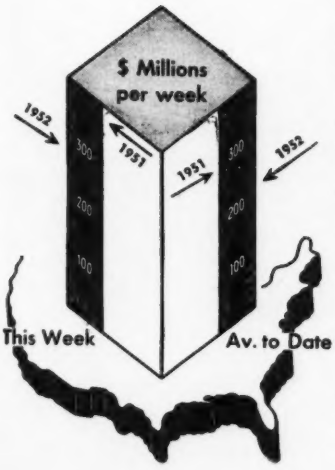
# THE CONSTRUCTION WEEK

**HO HUM!**—President Truman has signed an executive order creating an 11-member survey commission to make recommendations for "better protection, development and use, of land and water resources of the Missouri River Basin." He says they will have authority to study the entire basin.

**INQUIRY ORDERED**—Maryland's Gov. Theodore R. McKeldin has ordered "thorough inquiry into the adequacy of the design" of the $44-million Chesapeake Bay Bridge. His action followed the recent (ENR Jan. 3, p. 29) accident when the bridge superstructure was rammed and damaged by a 480-ft span which broke loose from towing tugs. Said the Governor, "A real emergency has been created by recent accidents and by persistent rumors that the bridge structure is too light to be safe." Retorted H. M. Brown, chief engineer for J. E. Greiner Co., who designed the bridge: "We have no qualms or any uncertain feeling, but that an entire study of the bridge will find it to be perfectly sound."

**PROTEST LODGED**—The Associated General Contractors last week launched a drive for legislation to offset the recent decision of the Supreme Court in the Wunderlich case (ENR Dec. 6, 1951 p. 25). It recommended to the Senate and House Judiciary Committee introduction of a bill which will include provision that: (1) Any government contract shall be subject to appeal to appropriate courts from rulings of the contracting officer or the head of the department both to matters of fact and law; (2) All existing contracts be modified accordingly; and (3) Any matter growing out of government contracts, which were legally in process at the time of the decision, have their status renewed as of the date of such decision, and that the contract be construed in accordance with the principles in 1 and 2. Action is sought at this session.

**TEN-YEAR PLAN**—It won't be easy and it will cost $1.5 billion said city planners in the Windy City last week as they took the wraps off their blueprint for building a better Chicago during the next decade. To do the job right, the public improvements will cost (in millions of dollars): expressways $416; water supply and sewage, $220; port and harbor, $150; city-wide parking, $104; rapid transit, $100; subways, $100; schools, $80; southside railway terminal, $75, land clearance $75; parks, $60; O'Hare airfield, $53; streets, $50; railroad grade separations, $45; civic center, $50, and bridges, $25.




**Contracts by type of work**

| | This Week | Cumulative 2 Wks 1952 | 1951 | % chge |
|---|---|---|---|---|
| Waterworks. | $7.1 | $17.2 | $1.7 | +123 |
| Sewerage ... | 5.0 | 9.7 | 15.8 | −39 |
| Bridges .... | 1.9 | 7.7 | 15.6 | −61 |
| Highways .. | 29.3 | 48.5 | 37.0 | +31 |
| Earthwork, Waterways. | 13.8 | 17.9 | 7.4 | +142 |
| Buildings: | | | | |
| Public .... | 47.3 | 79.8 | 195.9 | −59 |
| Housg., pub. | 27.8 | 32.2 | 61.2 | −47 |
| Housg., priv. | 32.5 | 53.5 | 33.0 | +62 |
| Commercial | 4.8 | 9.4 | 47.2 | −80 |
| Industrial.. | 97.9 | 137.0 | 113.1 | +21 |
| Unclassified . | 13.3 | 26.9 | 32.1 | −16 |
| **Total** ..... | **$280.7** | **$439.8** | **$570.0** | **−23** |

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

**ENR COST INDEX**

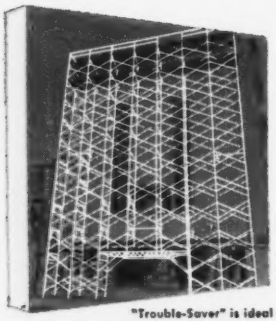
| Index Base = 100 | 1913 | 1926 | 1949 |
|---|---|---|---|
| Constr. Cost. Jan. '52 | 547.83 | 263.34 | 114.84 |
| Bldg. Cost... Jan. '52 | 405.62 | 219.26 | 115.30 |
| Volume ..... Dec. '51 | 404 | 164 | 117 |

**IN THIS ISSUE**—Mobilizers are planning to crack down on industrial construction in the second quarter (p. 23) . . . Public housing battle rages in Los Angeles (p. 25) . . . Five best planned communities are picked by the NAHB (p. 26) . . . Construction nears half-way mark at Garrison Dam (p. 28) . . . The first commercial phenol destruction unit has been completed (p. 30) . . . An ancient hydro system gets new life (p. 32) . . . Building one-bay wide has flat-slab construction (p. 37) . . . Precast walls speed defense plant (p. 38) . . . Concrete and steel are combined in construction of a long-span girder bridge (p. 42) . . . Precast concrete piles save steel (p. 44) . . . San Antonio has a huge new redevelopment plan (p. 50) . . . IBEW may cause split in AFL (p. 81) . . . Alternate design bids cause confusion on Army installations (p. 83).

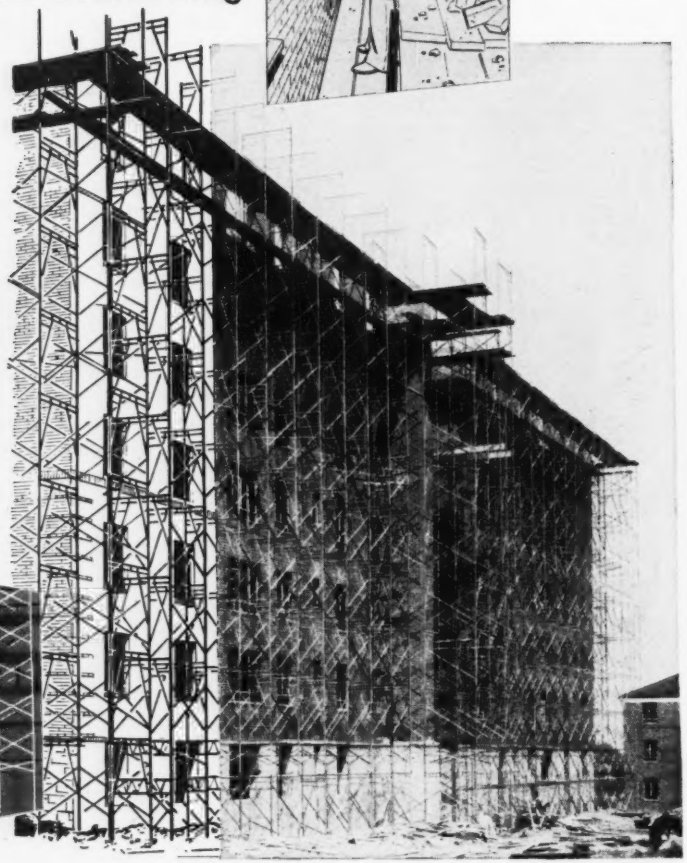
## Speeds Work . . . Lowers Costs

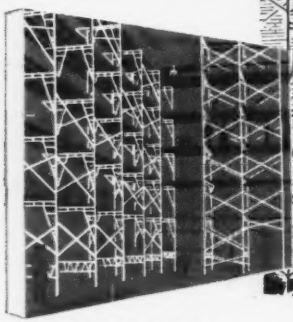
# "TROUBLE-SAVER"

## *Sectional Steel Scaffolding*



"Trouble-Saver" is ideal for repairs, refacing.





Typical interior installation for lathing, plastering, painting.

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DEFENSE MOBILIZER Charles E. Wilson says industry must make more shells, so . . .

# Mobilizers plan cutbacks in industrial construction

Washington is planning the toughest crackdown on industrial construction since World War II for the three months starting April 1.

Mobilization officials say that starts on only the most critically needed defense plants will be permitted during the quarter. And allotments of steel, copper and aluminum for projects already under way will be slashed on the same basis.

**There's no decision yet as to whether the holddown on new starts and short rations of metal for going projects will extend beyond the second quarter. But the likelihood is that the situation will improve only slightly, if at all, after July 1.**

The squeeze on the construction industry is generated by a sudden surge in military demands for copper. During the second quarter the controllers are faced with the task of finding 54,000,000 lbs more copper than the defense jobs will chew up in the January-March period. Estimated supply of copper for the second quarter is about the same as for the first.

• **Shells needed**—Biggest portion of the increased military demand is accounted for by ammunition requirements. Despite the recent lull in heavy fighting in Korea, use of automatic weapons there and in training camps has reduced ammunition stocks to the point where production must be stepped up sharply.

The additional demand for shell casings will take copper in the form of brass mill products, the same form used in large quantities for building materials. But the impact on construction goes far beyond materials. Other big non-military customers of the brass mills include producers of industrial equipment, without which no new plant can be operated, and components, which new plants chew up when they get into production. Copper allotments for all these users will be slashed by the defense production administration in the second quarter.

**That's why mobilization officials decided to hold up new plant starts. Even if building materials were available, it wouldn't make sense to let new plants go up if there would be neither equipment nor components for them when construction was completed.**

All civilian users of brass mill products will get less than they were alloted in the first quarter, though the size of specific reductions has not been determined. These determinations are expected to be made later this week.

A major factor in the picture for other non-military users will be the decision on allotments for the automotive industry, largest civilian consumer of brass mill products. In first estimates of second quarter allotments, DPA Administrator Manly Fleischmann proposed to reduce brass mill products allotments for the motor makers substantially below their first quarter level.

Out of an allotment of 87,000,000 lb of brass in the first quarter for automobiles and trucks, the industry figured it could produce nearly 1,000,000 passenger cars. Fleischmann's preliminary estimates would have cut this allotment to permit production of no more than 800,000 passenger cars in the second quarter. Other non-military users would have had their allotments reduced in a substantial measure, too.

But executives of the auto industry, meeting with Fleischmann and Defense Mobilization Director Charles E. Wilson, protested that such a reduction would result in unemployment for 100,000 employes in the area, which already has a serious unemployment situation. They asked for another three months of materials allotments on the first-quarter scale. That would give them time, they argued, to make engineering and technical shifts that would permit broad substitution of other materials for copper in auto production.

• **Another cut looms**—Mobilization officials had no immediate reply to this proposal. But they promised they would review all their preliminary copper allotment estimates. And the betting around Washington is that the auto industry will get

(*Continued on next page*)

# Cutbacks . . .

(*Continued from page 23*)
enough copper to produce more than 800,000 cars.

**If so, other users of brass mill products will have to take even less than was anticipated in the quarter. In any case, however, the construction industry was slated to carry a heavy share of the load.**

Authorizations for new starts probably will be limited strictly to new plants and facilities certified by the defense agencies as critical for arms production, materials for jobs already under way will be cut down, also, unless they fall in the same category.

## Where brass is used

Here is a list of the largest consumers of brass mill products, based on first quarter 1952 allotments. Most of the additional military demand for brass will have to come out of these products.

| | In lbs |
|---|---|
| Defense agencies | 239,000,000 |
| Motor vehicles | 87,000,000 |
| Industrial components | 84,000,000 |
| Electrical equipment | 59,000,000 |
| Building materials | 32,000,000 |
| Consumer durables, other than automobiles | 31,900,000 |
| Scientific equipment | 25,000,000 |
| General industrial equipment | 24,900,000 |
| Engines and turbines | 24,000,000 |
| Electronics equipment | 19,500,000 |
| Machine tools | 16,000,000 |
| Industrial facilities (plant) | 9,000,000 |
| Railroad equipment | 9,000,000 |

# Wilson forecasts continued pinch

No rosy hope for early easing of materials shortages was held out this week by Charles E. Wilson, director of Defense Mobilization, in his fourth quarterly report to the President. Reviewing progress of the defense build-up during 1951, he spoke with sober optimism of the work so far accomplished but warned that we have now entered the period of severest pinch in critical materials.

Wilson's broad estimate of the outlook for materials indicates pretty clearly the prospects for construction. Allotments for the second quarter, he pointed out, will be somewhat tighter than allocations for the first quarter. Beyond mid-year, he said, the outlook for the second half is not entirely clear, but "we can be sure the pinch will continue into 1953."

**Factory construction, up 90% in 1951 above 1950, is the major reason for the structural steel demand running far ahead of supply, the report stated. This situation will improve during the year. Industrial plants aided under the defense mobilization program were more than 40% completed at the year's end, and two-thirds of these plants will be finished in 1952.**

Even so, says the report, it is unlikely that large additional amounts of steel products, other than sheet steel, can be allotted to non-defense uses after the middle of 1952, as had been hoped. But Wilson indicated that the mobilization agencies hope to do more toward meeting increased requirements of highways, school and hospitals.

Copper and brass products will be the restricting items on construction, as the report made clear in its reference to housing. A high level of housing starts is expected in the first quarter, Wilson said, but shortage of copper for plumbing and other building products may delay completion of houses.

First-quarter allocations of both copper and steel would support an annual rate of 600,000 to 700,000 housing starts, he indicated. The general forecast of second-quarter allotments presages some cut in these allocations.

Credit controls are the only feasible method of restricting new housing starts, Wilson made clear. Legislation is necessary, he said, to restore effective credit authority. As previously noted in these pages, there is little chance in an election year that congress will revoke the easier credit requirements enacted last year for houses up to $12,000.

• **Other moves**—On other curtailment moves to hold down the volume of non-essential construction, Wilson stressed again that mobilization agencies are tightening the issuance of rapid tax amortization privileges for industrial expansion, are screening contracts involving new construction for military production, and are stopping practically all commercial construction except that directly related to defense.

Some of this commercial building goes into new defense housing areas. With more than 116 areas so far certified for nearly 70,000 housing housing units, Wilson declared that substantial additional funds are needed to supplement the $15 million for community facilities and $25 million for government housing appropriated to date.

The mobilization program will continue on the basis of giving first to the armed services and to the Atomic Energy Commission the materials needed to meet their requirements, as screened and boiled down by those agencies.

The rest, Wilson reiterated, will be distributed to non-defense users in the way that the government and its advisors think will best support the national economy. Wilson mentioned the proposed program for AEC, now expanding its present $2.5-billion plant investment to $5 billion, but he gave no indication as to what the new plan might mean in 1952 or later.

• **Plant construction**—Total contracts awarded for privately owned factory construction in 1951 amounted to 2,200 million, a 69% rise over 1950, Wilson said. The total 1951 investment for plant expansion is estimated at 11,100 million, as compared with 7,500 million in 1950—an increase of 48%.

"Factory construction put in place was 90% higher than in 1950, which is a major reason why demand for structural steel has been far ahead of supply," he said.

# NPA tightens controls on metal fabricators

The National Production Authority last week took two actions to tighten its Controlled Materials Plan: It told fabricators they cannot use more steel, copper or aluminum in any quarter than they are allotted; and removed some of the self-certification of priorities previously granted to small users of the metals.

In detail, the NPA ruling on use of materials is contained in Amendment 2 to CMP Regulation 1. The ruling is not an order telling fabricators how much of their product they may make. It is designed to prevent producers from taking controlled materials out of their inventories too fast. Under Amendment 2, fabricators cannot use any more of the three materials—after April 1—than they are allotted, unless special permission is granted for use then.

The priority ruling is contained in Direction 1 to CMP Regulation 1. Until now, a fabricator didn't have to go through application procedures for allotments if he planned to use less than certain amounts of steel, copper and aluminum in the second quarter (up to 30 tons of carbon steel, 2,000 lb of aluminum). Now, such a fabricator cannot use self-certification privileges, if his requirements for materials in the second quarter will exceed his average quarterly consumption in 1950.

**REPRESENTATIVES of civic groups, labor, and just plain private citizens line up to give their views in the stormy session of the Los Angeles Council during which the council passed a resolution cancelling the city's contract for $110 million in federal public housing. Among the speakers was M. J. Brock, who strongly urged cancellation in spite of the fact that his firm, M. J. Brock & Sons, has bid on the construction. (L. A. Times photo)**

## Battle see-saws over housing project

"It's up—it's down" seems to be the best description for daily developments on Los Angeles' $110-million federal public housing program.

City council sessions on the program have been stormy, and played to a full and noisy house. Shouted insinuations of bribery between opposing councilmen have featured some of the hearings. Individual and group spokesmen on both sides of the fence have formed long lines at the public address microphone to state their views on the subject.

Death knell of the controversial program seemed to be sounded two weeks ago when the city council by an 8-7 vote adopted a resolution cancelling the city's contract with the City Housing Authority.

The victory for the anti-public housing forces turned out to be a tentative one, however, and the battle continues full tilt, with Mayor Fletcher Bowron vehemently on the side of the minority seven.

• **Two tests**—The resolution faces two tests, one from the mayor and one from a suit filed by the City Housing Authority with the State Supreme Court.

The court has set a hearing for Jan. 11 on the CHA suit, which asks that the city be compelled to live up to its contract.

The CHA commissioners have agreed to "curtail all operations and not to incur any additional obligations" until the matter has been decided in the courts.

Meanwhile, the mayor has in effect vetoed the resolution, maintaining it invalid since the contract was originally adopted by the council with an ordinance. A resolution needs only a bare majority to pass, whereas an ordinance is subject to veto by the mayor, and 10 votes are necessary to override the veto.

The voters may have the final word on the subject. At its latest session, the council unanimously adopted a resolution to have the city attorney prepare legislation for submission to the voters at the primary elections June 3.

• **Reversal**—The cancelling resolution was passed by the council less than a month after that body had adopted a sweeping motion of blanket approval of the program and ordered full-speed-ahead on vacating streets and alleys. That motion stood on the books for one weekend, and at the next council session was reversed when councilman Harold Harby shifted sides.

The line-up since then has been consistently eight against the program and seven for. Harby has become a leader of the anti-housing forces.

The program has been a point of controversy ever since it was adopted two years ago, largely on the urging of Mayor Fletcher Bowron. When Congress amended the Independent Office Appropriation Act last August to permit localities in certain instances to withdraw from such programs, pressure mounted rapidly for Los Angeles to end its contract with the housing authority.

The Home Builders Institute, the Chamber of Commerce, the Realty Board and other similar groups have led the fight to scuttle the program. Battle lines on the other side have included various labor organizations, the League of Women Voters, the Los Angeles Citizens Housing Committee, and the City Housing Authority itself.

## Three firms tackle Incodel plan study

Pennsylvania has three consulting firms evaluating the Incodel plan in an independent study ordered by Governor Fine last year. According to unofficial information received last week, the firms are: Greeley & Hansen, Chicago; Chester Engineers, Pittsburgh; Gannett Fleming Corddry & Carpenter, Inc., Harrisburg, Pa.

The half-billion-dollar river development plan of the 4-state agency (Interstate Commission on the Delaware River Basin) had received approval from New Jersey and Delaware last year—with indication that New York would go along—when Pennsylvania's Governor Fine decided he needed more facts (ENR June 28, p. 104).

Consulting engineers for Incodel, who conceived the plan and reported on it first two years ago, are: Albright & Friel, Inc., Philadelphia, and Malcolm Pirnie Engineers, New York.

Current study in Pennsylvania started last Nov. 19 with unannounced selection of the three consulting firms. Their first progress report is said to be expected Feb. 19, with monthly reports thereafter until completion of the study in six or seven months.

The 1951 legislature in its last gasp appropriated $350,000 for Incodel study. Only $250,000 had originally been asked to implement contracts with the three firms. The extra $100,000, observers think, is a fund to fight any New York State effort to divert any more Delaware water.

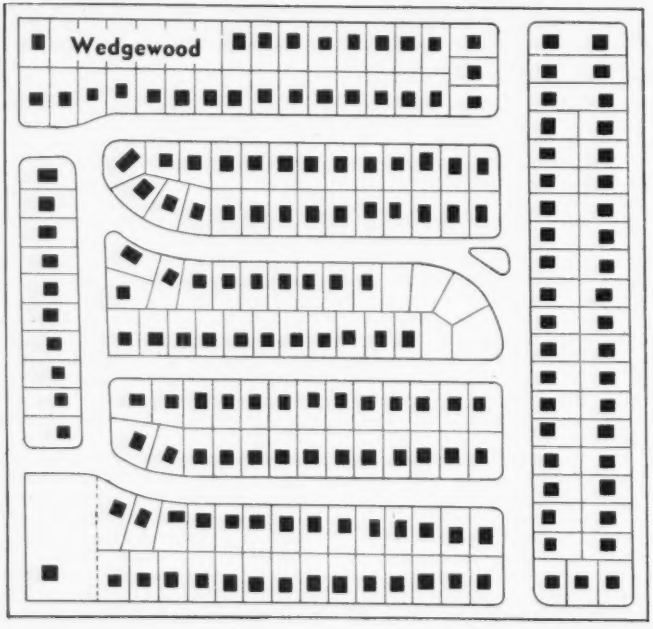
• **Further complications**—Meanwhile, consultants recommending New York City take to the Hudson for future water supplies (ENR Dec. 13, p. 29) have advised against the city's participation in the Incodel plan, calling it too costly in its first stage. (Second stage development would cut the price per million gallons.)

Still another threat to the hobbled Incodel plan came last October when New York State's Attorney General Goldstein declared that "in all conscience we cannot hold back New York City any longer" from petitioning the U. S. Supreme Court to raise its 1931 limit of 440 mgd on water the city might divert independently from the Delaware.

The city's petition is said to be ready. But New York must first decide whether it wants more upland waters—as its own engineers recommend—or wants to accept the Hudson River proposal of its outside consultants. This decision, when made, will have its effect on New York State action yet to be taken on the Incodel plan.

PARK FOREST, Ill. rental units are two-story structures. Costs of single family homes of slab construction start at $13,000.

# NAHB picks five nice places to live

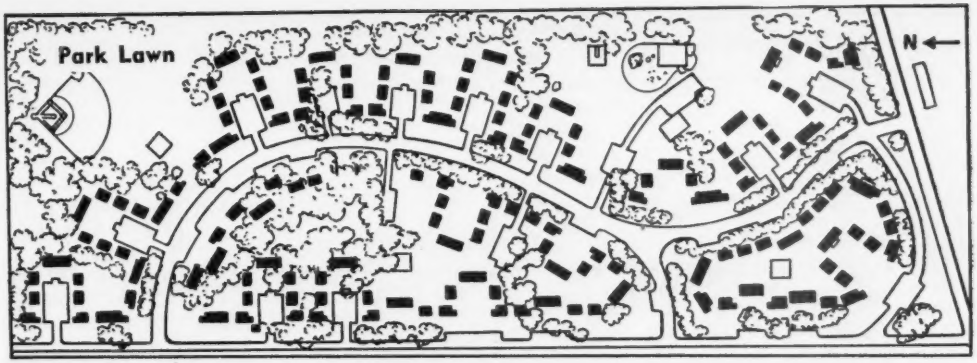



The National Association of Home Builders has announced "Best Neighborhood" awards to five new communities. Award scrolls will be presented at the NAHB Convention in Chicago, Jan. 20-24.

Awards were based on projects of single family homes, garden apartments and shopping centers. Construction had to be 70% complete. Judges allowed a possible 70% for site planning and layout features, and 30% for architectural design of buildings. Here are the winners:

• **Park Forest** – Builder: American Community Builders, Inc., Chicago; Chief architects and planners: Loebl, Schlossman & Bennett; Consultant for site and town planning: Elbert Peets; Consulting engineers: Consoer, Townsend & Associates; Planners and architects: Kincaid & Hutchinson.

This community, 30 mi south of Chicago, includes 3,000 rental units and several hundred single family homes, schools, a major shopping center of some 53 acres and two smaller neighborhood shopping centers planned, lakes, athletic and play fields. The street plan provides for




main arterial streets, and for residential streets which do not encourage through traffic.

• **Wedgewood**—Builder: Albert Balch, Seattle; Architects: Thomas, Grainger & Barr; Chiarelli & Kirk.

This project of some 200 homes ranging from $10,000 to $16,000 with garage included, is excellently located in relation to transportation, schools, shopping centers and recreational facilities. The typical lot is 60 x 100 ft. Subdivision plan is simple in design, but with a few curved streets.

• **Park Lawn**—Builder: Todd Tibbals, Columbus, Ohio; Architects: Tibbals-Crumley-Musson.

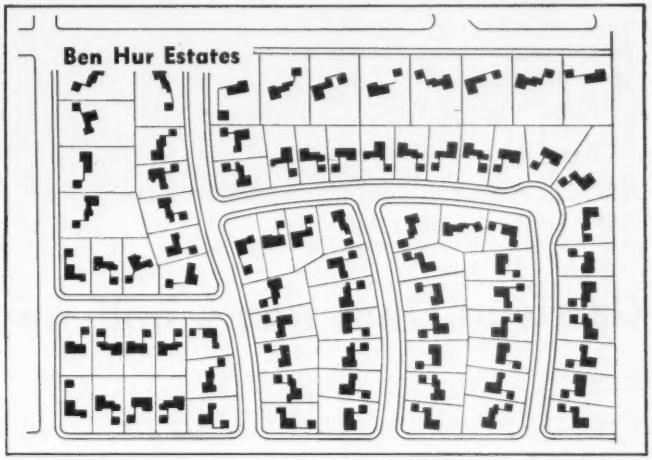
This is a rental housing project of two-story vertical apartments of 2 to 4 units in the $72 monthly rental range. The street plan, parking, and grouping of structures conserve space for landscaping and recreational facilities—including swimming pool, softball park, and children's playgrounds. The architectural design retains a residential character rare among rental projects.

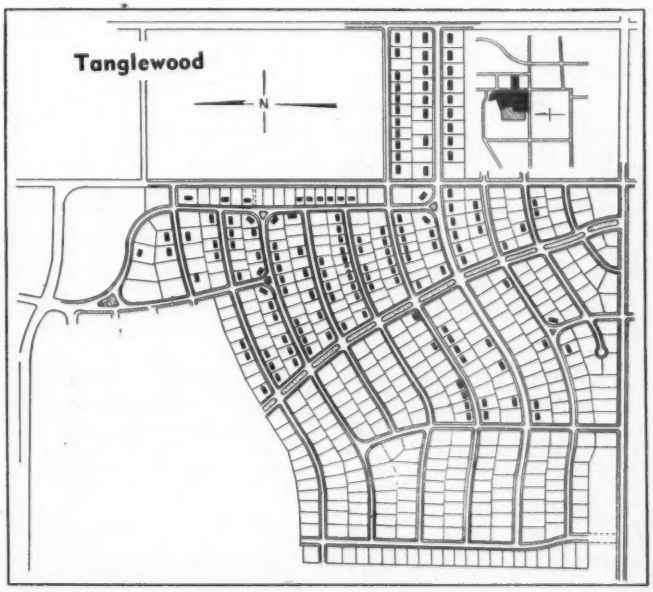
• **Ben Hur Estates**—Builder: Kembo Corp., Los Angeles; Architect: Henry Charles Burge, Burge and Roach; Land planner: William H. Fair.

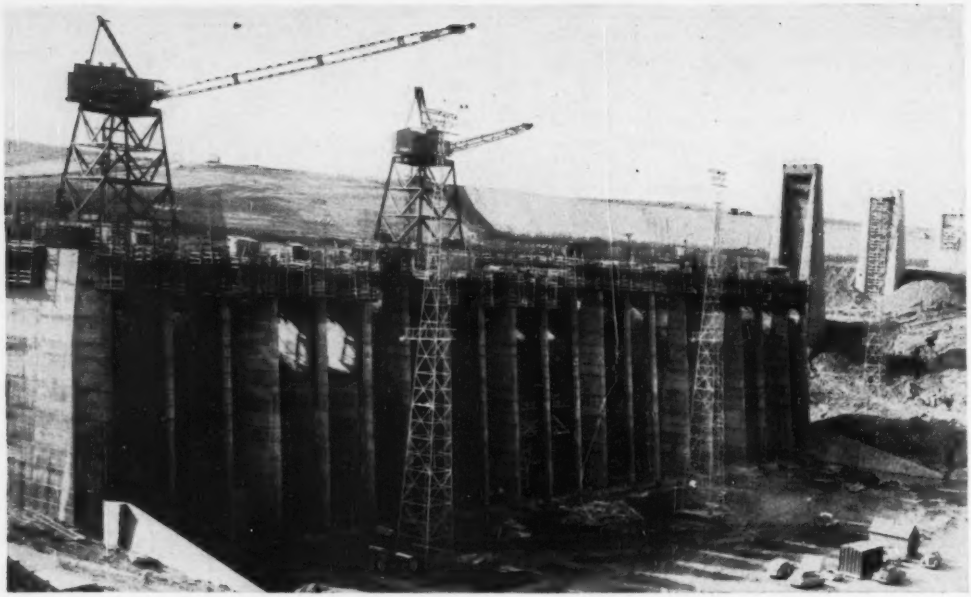
Architecturally, this project of just under 100 homes on rolling topography, is a good example of contemporary design. One story homes starting at $14,000, are of concrete slab construction, and are built for outdoor living. Houses are spaced well.

• **Tanglewood**—Builder: Wm. G. Farrington, Houston; Architects: Phillip G. Willard, Wylie W. Vale.

The aristocrat of the NAHB's selections is this community of homes in the $40,000 price range. House designs show a commendable variation in use of exterior materials and variations in the type of roofs. Placing of large window bays, and the grouping of window areas, are well handled.





**INTAKE STRUCTURE**—already 100 ft high—has another 110 ft to go to reach its full height of 210 ft. Then it will be topped by a 71-ft building containing the gate-operating equipment. (Fargo Forum photo by Gifford Herron)

# Garrison Dam nears half-way mark

A SIGNIFICANT MILESTONE will be reached some time this spring at the Corps of Engineers' Garrison Dam on the Missouri River in North Dakota. Then construction of the huge multiple purpose flood-control and hydroelectric power project will have reached the half-way mark—in value of construction completed.

At the end of calendar year 1951 the $268,000,000 project was 42% finished. By July 1 of this year, according to Army Engineer estimates, this figure will be raised to 52%. New construction contracts awarded during fiscal year 1951 (ending June 30, 1951) totaled $11,600,000. Federal funds approved by Congress last October (ENR Oct. 25, 1951, p. 24) gave Garrison $37,083,700 for additional construction during the fiscal year of 1952.

These 1952 fiscal funds will permit continuation of existing contracts, advancing the project as follows: The rolled earthfill embankment on the west side of the river will be brought up to its full height of 210 ft. The reinforced concrete intake structure—equal in height to a 15-story building—will be advanced to 85% of completion; and the stilling basin and powerhouse foundation will be advanced to 64% of completion. Earthwork for the dam as a whole will progress to about 55% of completion by July 1 of this year.

A $15,339,000 contract for Stage IV earthwork (including closure) was awarded last October (ENR Nov. 15, 1951, p. 28). Other new contracts to be awarded under the 1952 schedule include: intake structure equipment; powerhouse transformers; Stage I of the spillway structure; spillway gates, reservoir clearing operations; and relocations of highways.

• **1951 contracts**—In addition to the Stage IV earthwork contract, there were 17 contracts underway during the 1951 construction season, representing $45,157,000 worth of work. Two contracts totalling $1,553,000 were for furnishing concrete aggregates. The others were for operating equipment.

Operating as joint ventures, Peter Kiewit Sons' Co. and Morrison-Knudsen Co., Inc., hold a $15,126,000 contract for the huge intake structure, and a $5,741,000 contract for excavation and main embankment Stage III. United Construction Co. has a $9,749,000 contract for the stilling basin and the powerhouse foundation.

Other contracts, together with the amounts of the contracts and the contracting companies are: Three 84,210-kva generators, $4,952,000 and automatic transformers, $399,000, both by General Electric Co. Three 88,000-hp turbines, $2,666,000, Baldwin Locomotive Works; penstock gates, $469,000, Westinghouse Electric & Manufacturing Co.; and governors, $119,000, Woodward Governor Co.

There were two relocation contracts: Snake Creek embankment, $2,592,000, by Lytle and Green Construction Co.; and North Dakota State Highway 23, by the A. T. Nolan Co., for $245,000. The Peter Kiewit Sons' Co. also held a $309,000 contract for furnishing and placing riprap, and a $360,000 contract for the service bridge connecting the top of the embankment to the intake structure.

Gate hoists, costing $643,000 are being fabricated by Northwest Marine Iron Works; Emergency gates, by Philips & Davies, Inc., for $139,000; and riprap stone, by Hector Construction Co., for $95,000.

• **Completed by 1957**—Additional funds needed to prosecute the orderly construction of the Garrison Dam project to its ultimate completion in 1957 total $148,346,000. As reported by the Missouri Basin Inter-Agency

Committee additional construction funds required by fiscal years are: $42,967,000 for 1953; $43,450,000 for 1954; $36,850,000 for 1955; $16,279,000 for 1956; and $8,800,000 for fiscal 1957 (ENR Dec. 20, 1951, p. 104).

The committee is made up of five state governors from the Missouri Basin and representatives of five federal agencies.

• **One of four giants**—Garrison is one of the four giant hydroelectric power and flood control dams on the Missouri. The others are: Fort Peck, in Montana (completed); Oahe and Fort Randall (under construction), both in South Dakota.

All four projects, when completed, will have a combined storage capacity of 72,300,000 acre-ft. Of this amount, 12,400,000 acre-ft will be dead storage; 48,600,000 acre-ft for hydroelectric power; and 11,300,000 acre-ft for flood control and other uses.

• **Garrison highlights**—Statistics alone are inadequate in describing the hugeness of Garrison Dam, but they may help. With its 70,000,000 cu yd of embankment it is rated the world's largest rolled-fill earth dam. Oahe's total embankment, however, may exceed Garrison's by about 8,000,000 cu yd.

Garrison dam will be 12,000 ft long, 2,600 ft wide at the base, and 210 ft high. Although it is called an earth-fill dam it will contain 1,500,000 cu yd of concrete, together with 650,000 cu yd of riprap. The 1,444-ft spillway, located in the east abutment, will have twenty-eight 29 x 40-ft tainter crest gates. At maximum pool elevation the spillway can discharge twice the flow of the greatest flood on record.

Eight 1,200-ft tunnels in the west abutment will handle all discharges for power development, flood control, irrigation, navigation and other purposes. The five power tunnels are 29 ft inside diameter of the concrete lining; one flood control tunnel is 26 ft inside diameter; and the other two are 22 ft.

Three generators, to be installed initially in the powerhouse just below the downstream portals of the power tunnels, will have an installed capacity of 240,000 kw. Ultimately this capacity will be increased to 400,000 kw by the addition of two more units.

• **Engineers in charge**—Garrison Dam is being built under the supervision of Lt. Col. R. J. B. Page, district engineer, Garrison District, reporting to Brig. Gen. D. B. Shingler, Missouri River Division Engineer, Omaha, Nebraska.

## Ohio makes advances in toll road plans

The Ohio Turnpike Commission last week received from the engineering firm of Parsons, Brinckerhoff, Hall & Macdonald of New York, a schedule of toll rates for its proposed $300-million superhighway across northern Ohio.

The rates call for 1.2 cents a mile for passenger cars, 4.3 cents a mile for the average truck, and up to almost 10 cents a mile for combination trucks ranging up to 78,000 lbs.

The commission also decided to hire Land Title Guarantee & Trust Co. of Cleveland to begin acquisition of title to right-of-way land. It is estimated to cost about $7 million.

In other actions, it decided to place the right-of-way at a lower level in the controversial Maumee district near Toledo. It also agreed to consider a similar plan for the route at Elyria.

• **Highway notes**—Michigan's State Highway Department reports it contracted for $41 million worth of road projects in 1951 and expects a $45 million construction program in 1952. . . . North Dakota will put about $11.5 million into contract work on its primary highways in 1952. . . . Montana's State Highway Commission awarded contracts totalling more than $13 million during 1951. . . . Dean Charles E. MacQuigg of Ohio State University's engineering school, has been named to head an investigation of the Ohio State Highway Department. Other members of the committee will be named soon. No date has been set for the investigation to start. . . . A 24-mi section of the New York State Thruway between Liverpool and Canastota was officially opened to commercial passenger and commercial traffic minus overpasses to eliminate cross traffic. Lack of steel has delayed construction of the overpasses.

Individual projects in Chicago's metropolitan expressway system will cost about $13 million in 1952. . . . Both the State Highway Department and the U. S. Bureau of Public Roads have approved preliminary plans for a $10.5-million expressway system at Columbus, Ohio. . . . An eight-lane toll highway to cost $100 million running from Boston to the Berkshires has been recommended to the Massachusetts legislature by Governor Paul A. Dever. It would link with the New York Thruway and Connecticut's superhighways. . . . A study has been ordered to determine whether the New Jersey Turnpike Authority can undertake construction of an east-west toll road through Essex County at an estimated cost of $80 million to $100 million.

## NEWS BRIEFS

• **WSB delay**—Decision of the Wage Stabilization Board on charges that Hedin Construction Co. paid illegal rates to bricklayers in Detroit, will not be announced until Jan. 15 at the earliest, inside sources say.

• **Utilities active**—Pacific Gas and Electric Co. will spend $162 million for expansion in 1952. About $132 million of this will go for new or enlarged electrical facilities and the rest for gas facilities and other properties. . . . Consolidated Edison Co. of New York, Inc., plans to raise about $65 million in new capital to help finance a $105 million construction program during 1952. . . . Bell Telephone Co. of Pennsylvania plans to spend $247 million for construction in the next three years, about $82 million to be used in 1952. . . . Pennsylvania Electric Co. plans to spent $26 million for expansion in 1952.

• **Bridge activity**—The 480-ft spans for the Chesapeake Bay Bridge which broke loose from towing tugs and went aground off the Eastern Shore of Maryland (ENR Jan. 3, p. 29), is being partially dismantled to prevent it from tipping into the water. Barges were filled with water to hold them fast on the bay bottom. Floating derricks are being used to lift the span after dismantling. When the barges are refloated, they will carry the span to the steel-erection dock beside a western shore section of the bridge for reassembly. . . . A $5.2-million two-lane bridge to cross Tampa Bay alongside Gandy Bridge, is under study in Tampa, Fla.

• **More alumina**—Reynolds Metals Co. has issued a letter of intent for the engineering and construction of a $42-million alumina plant in San Patricio County, Texas, to C. F. Braun & Co.

• **Housing planned**—The Columbus (Ohio) Metropolitan Housing Authority will start a survey for the site for the first 500 units of a $22 million housing program on January 15. Construction is expected to begin in July, and 2,200 units are planned for completion in two years.

• **Tallest garage**—Construction of a 31-story parking garage (the world's tallest) and 17-story office building to cost about $8 million is proposed for the corner of the Avenue of the Americas and 45th St. in New York City.

**Water agency action forces industry into completing the country's . . .**

# First commercial phenol destruction unit

COMPLETION of the country's first full scale commercial waste treatment plant to destroy phenols by chlorination has resulted in the recent lifting of an injunction against Pequanoc Rubber Company, Butler, N. J. More such installations are due to be built.

The Passaic Valley Water Commission, depending on the Pequanock River (a Passaic tributary) for part of its supply, had brought suit in April, 1950, in a move against objectionable phenols in the stream. Similar pressures existing elsewhere should cause like action against the prevalent and heretofore unbeaten phenol taste problem.

This is the initial application of a principle publicized recently in the findings of pilot studies undertaken by three chemical firms under sponsorship of the Ohio River Valley Water Sanitation Commission (ENR Aug. 16, p. 43).

Pequanoc Rubber is a reclaiming company making sheet rubber from old tires and tubes that are finely cracked by comminutor. Until recently, the process involved defiberizing this scrap in lead-lined vats with 10 percent sulfuric acid and steam. Wash water was acid, requiring neutralization before discharge.

• **Enter the phenols**—In a digester process added in 1942, the scrap is pressure cooked in steam jacketed vats along with defiberizing agents such as caustic soda or metallic chloride—plus plasticizing oils. It is these oils, of the terpene family, that introduce the phenols. And they get up as high as 5 or 6 ppm in the process effluent.

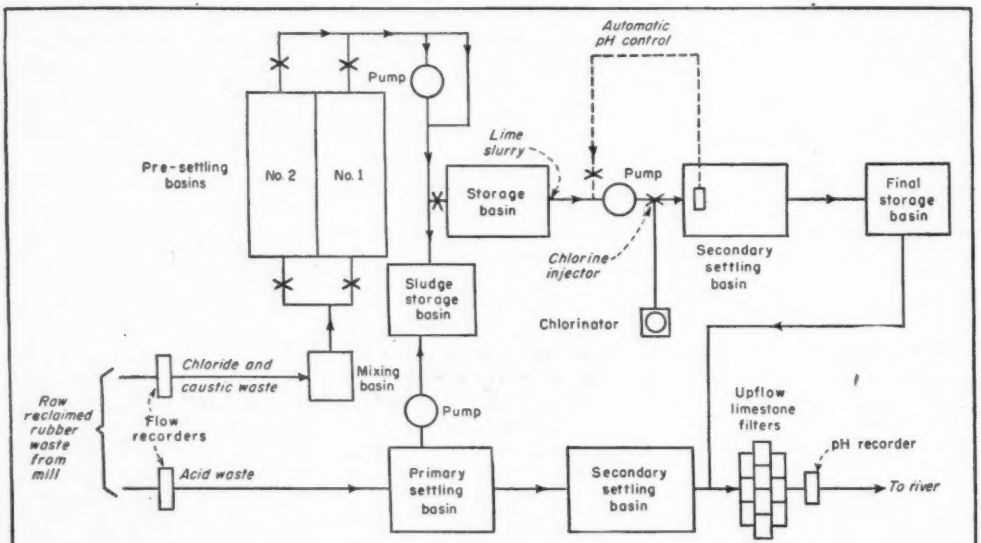
When the rubber company saw phenols in its effluent so radically raised from the less than one part per billion of pre-1942, a process was sought that would destroy the phenols. Urgency of the search increased in the water-short days of 1949-50 when Passaic Valley Water Commission first turned to the Passaic to supplement its share in Wanaque Reservoir.

Quest for a phenol-free effluent low in both color and odor put the alkali and chloride waste of the rubber digesters through a variety of tests, including a futile effort at trickling filter treatment. Findings of the cooperative efforts in Ohio, referred to above, were analyzed, as were other sources of information. Experiments showed chlorine to be the most economical dephenolizing agent for particular wastes involved. It was also found best at removing color, in which the rubber wastes are understandably high.

Pilot plant tests were run to determine data on coagulants, settling, pH control, chlorination and retention time.

• **Findings**—(1) Copperas was determined to be best coagulant for the liquid alkali wastes. (2) Strict control of pH (above 7) was found necessary for chlorine treatment. (3) Lime proved the best and cheapest for pH control; caustic soda caused severe foaming when added to soap-producing substances in the waste. (4) It was better to pump wastes through the chlorinator injector than to apply chlorine solution; chlorine odors were thus minimized. (5) Chlorine retention time of at least 3.5 hours was required for odor control on the waste. (6) When dephenolized alkali wastes were added to wastes from the plant's acid defiberization process, residual chlorine in the alkali flow was consumed by the acid waste, which in turn had its color reduced.

• **Application**—The completed plant now destroying phenols for Pequanoc Rubber applies all the principles that pilot operations evolved. I. Russell




FLOW DIAGRAM OF TREATMENT PLANT

**NO CHANCE—Phenols don't stand a chance of getting through. An overdose of chlorine kills them. Then acid wastes consume the excess chlorine before neutralized wastes are discharged—low in color, low in tastes.**

Riker, of Princeton, N. J., was consultant on design, and the installation was constructed making use of existing settling basins and outfall at a cost of $90,000.

In normal operation, the disposal plant treats 50,000 to 60,000 gpd of alkali waste, and 250,000 or more gpd of acid waste. It is an intermittent operation over the 24 hours.

Treatment sequence is this:

Alkali and chloride waste is metered and mixed with copperas before primary settling. There are two 50,000 gallon reinforced concrete settling tanks. A 4-inch diaphragm pump of all iron construction pumps the waste from settling tanks to a storage basin and pumps sludge to existing lagoons. A lime-slurry feeder next adjusts pH and caustic solution is added, if necessary, for finer adjustment. Two 60-gpm all-iron pumps then move the waste to injectors of two 1,500-pound chlorinators. Chlorinated waste goes to a retention basin, then to storage and finally to combination with acid wastes before discharge.

Acid waste, meanwhile, gets primary and secondary settling. Then it joins the alkali waste, to benefit as noted above. Finally, the combined waste passes through upward-flow limestone filters for further neutralization.

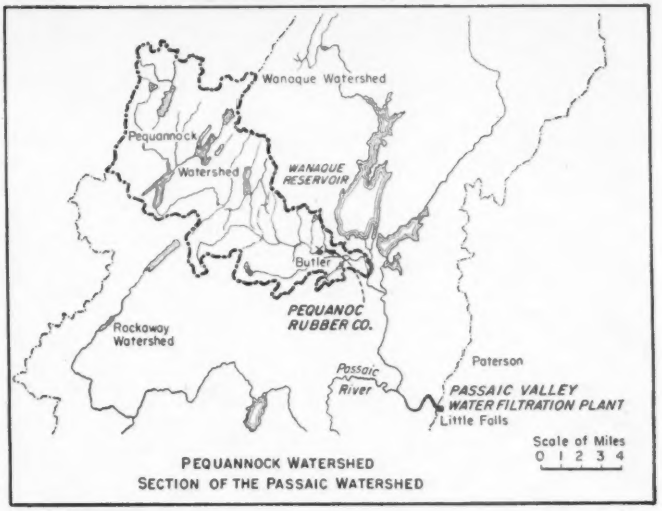
Careful check on pH is made both before chlorination of the alkali waste and before final discharge of the combined wastes. A control pH of 8.2 before chlorination generally becomes about 5.5 after combination.

• **Results, costs**—Phenols are completely destroyed. There is a 75 percent reduction in color, 60 percent in odor.

At this writing, Pequanoc Rubber is spending over $200 per week on chlorine alone for its waste treatment process. This figures to about one cent per gallon of wastes treated. Total cost for chemicals (lime and copperas, plus chlorine) reaches 1.25 cents per gallon.

The company has under study various filters for reclaiming the solids now pumped as sludge to lagoons. It has no wealth of lagoon area and thus must every few years dig out and haul away the waste solids. These are valuable rubber, or would be if they could be reclaimed early in the waste handling process.

Warren Secrist, the company's chief chemist, supervises operation of the waste works. Experimental work done in its development had the cooperation of A. E. Griffin, N. S. Chamberlin and N. S. Cornish of Wallace and Tiernan Co., Inc., Newark, N. J.




**NO CHOICE—This industrial waste treatment process costs money. But the industry involved had no out. It discharges into a tributary of the Passaic River, source of local water supply. Phenols had to be destroyed.**

# New plans to abate pollution studied at state level

Among important recent moves to fight pollution are these in Utah, Ohio, and California.

Utah's State Legislative Council is appointing a seven-man committee to study types of anti-pollution legislation as a step toward cleaning up the state's streams.

Creation of the study group follows a council subcommittee meeting last month with 30 representatives of business, industry, labor, agriculture and public health. At the meeting State Health Commissioner George A. Spendlove said Utah lags behind the rest of the nation in sewage treatment. Only 2% of the state's collected sewage is treated fully, he said, and only 17% receives primary treatment.

In Salt Lake City anti-pollution action is underway. A citizen's advisory committee has been appointed to aid with preliminary studies of a proposed $8 million sewage disposal program.

The investigation's scope is expected to include improvements to the big municipal water supply system and the city's storm sewer system. It is considering methods of financing the project. Issuance of revenue bonds to be amortized by service charges has been suggested.

• **Ohio move**—The State Emergency Board has approved a $45,780 appropriation for the newly created Ohio State Water Pollution Board for the last six months of the current fiscal year.

Of the total, $31,100 was specifically earmarked for a mobile laboratory unit, and $14,680 for personnel and equipment. The mobile laboratory will be used to spot check streams.

• **Deadlock broken**—In California, following an argument ending nearly three years of deadlock, the Orange County Sanitation District called for bids Jan. 3 on sale of $8 million in bonds for a new county-wide sewerage system.

First phase of a $60,000 research program in San Diego to determine the best means of disposing of 280,000,000 gallons of sewage effluent in the metropolitan area, has been completed.

The Regional Water Pollution Control Board estimated almost $20 million of new sewage disposal construction will be needed to accommodate anticipated future needs.

• **Survey made**—The State Health Department of Idaho has conducted a statewide water pollution survey and is recommending construction of sewage disposal plants in metropolitan areas.

HOLYOKE, MASS., population 55,000, was built on water power. Since 1849, wheels of this Connecticut River mill city have turned under pressure of a still operative three-level canal system. Dam can be seen on the river at top center.

# Century-old hydro plant gets new efficiency

A 15,000-kw hydroelectric plant put on the line late last November by Holyoke Water Power Co. revises operation of that Connecticut River city's intricate old canal system. Holyoke's hydro scheme is unique, but the general problem of revamping old systems to meet new demands is prevalent.

When in 1889 ENGINEERING NEWS carried a statement on water power in Massachusetts, the hydraulic system at Holyoke was already 40 years old. Desmond Fitzgerald, then president of the Boston Society of Civil Engineers, said:

"If we take the three great hydraulic centers, Holyoke, Lowell and Lawrence, where the power of 35,000 horses is daily utilized . . . we shall hardly find their equal, as far as scientific development of power is concerned, in any portion of the globe."

Holyoke at the time developed 23,000 hp in the many water wheels of its mills. The well-designed canal system that made this possible is to this day largely unaltered.

A 30-ft high timber-crib dam across the Connecticut River provided the head in those early days. Rapids in the river bend enclosing the city below the dam added another 25 ft to total fall. The gravel-filled timber structure was replaced with a masonry dam 30 ft high and 1,020 ft long in 1900. Head remained the same.

In the three-level canal system there was a 20-ft drop from the first to the second canal; 12.5 ft from the second to third; varying falls up to 24 ft from the third to the river. The rectangular channels were 150 ft wide at upper ends, reducing gradually to 80 ft. Depth of water varied from 6 to 30 ft.

• **Claim to fame**—Holyoke was the largest paper producer in the U. S. in 1889. But fame came, too, from hydraulic measurement work on wheels brought there for the purpose. In a flume designed by Clemens Herschel, engineer of the Holyoke Water Power Co., wheels were tested and rated at various speeds.

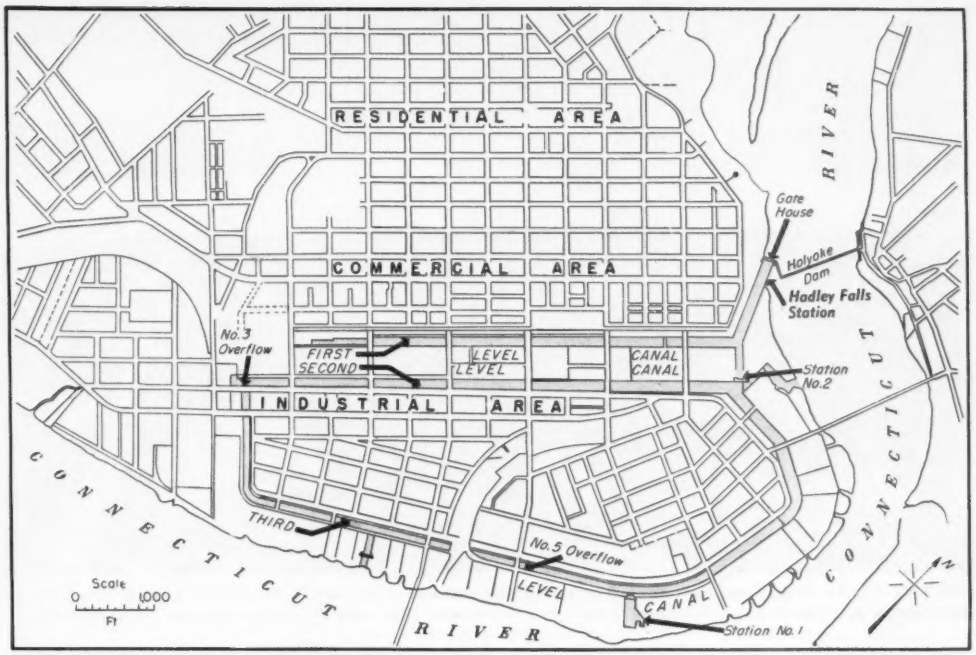
The Water Power Co., which had bought out a predecessor in 1859, was then, as now, a guiding force in the growth of the city. From the beginning it sold water to the mills and built mills to sell water to. Today, as the city's biggest tax payer, it still owns acres of undeveloped mill sites.

Water power has largely progressed to hydroelectric power. Through the years, the wheels within many of the mills have been teamed with electric generators. And outside the mills, on the canals, the power company has installed central stations—bolstered by steam turbo-generators.

In 1905 Station No. 1 went into operation. It has grown since into a five-unit, 7,640-kw hydro plant utilizing the drop between the second level canal and the river, plus 42,500-kw of steam capacity in five units. Station No. 2, a 2,900-kw hydro plant, was put on the line between canal levels one and two in 1924.

• **Now, Hadley Falls Station**—The latest, 15,000-kw addition to the system is in a new powerhouse at the dam—apart from the canal system. This unit will be operated in coordination with the many existing hydraulic units on the canals in such a manner that the most efficient, practical use of the Connecticut River flow at Holyoke will be approached at all times.

Until now, water has been delivered




**THE CANAL SYSTEM** governed layout of Holyoke. Philander Anderson was the engineer who planned the city, commissioned by the visionaries who saw the river's hydraulic potential. Map includes newly opened Hadley Falls Station at the dam.

to users by contract in order of priority. Now, with the new central source of hydro power available, water in addition to that which turns its wheel will be dealt out to the canal system installations in order of their operating efficiencies. At times of low flow in the river, only the installations of relatively high efficiency will be operated.

The plan of operation is such that none of the users of water from the canal system will suffer an economic loss. Those users whose installations will not operate at times of low river flow will receive electrical energy to compensate for their loss of water power. Thus, low efficiency units will be idle for varying periods of time while their owners receive substitute electrical energy.

The new power house is a brick-faced steel frame structure built with provision for future expansion landward to house a second unit. A sheetpile connecting link is built right into the station's substructure for future joining of a downstream cofferdam that would permit dewatering for expansion.

Rock and earth excavation amounting to 279,000 cu yd in the tailrace of the plant brings it 2,800 ft downstream, well into the channel of the river. (See ENR April 27, 1950, p 40, for an article on underpinning of the Holyoke-South Hadley Falls highway bridge necessitated by tailrace excavation.) Excavation brought tail water level down to El. 50, making the operating head on the turbine 50 ft.

The waterwheel in Hadley Falls Station is a Kaplan type within a reinforced concrete scroll case. The penstock, also reinforced concrete, is of unusually large diameter, 28 ft.

Headworks are built for two penstocks; the one that will feed the future unit is stopped just below the intake and plugged for now with concrete.

The new intake itself is conventional construction; stop logs, screens, head gates, and track-riding hoisting equipment for their operation.

The unconventional entered into intake construction. In dewatering to remove existing abutment concrete so that the intake structures could be built, the contractor used a cofferdam having two cells of unprecedented size. It is this cofferdam construction story that follows:

# . . . built behind cofferdam cells of record size

Two cofferdam cells, each 76 ft 4½ in. in diameter, were driven to rock and gravel-filled in dewatering the intake construction area for Holyoke Water Power Co.'s Hadley Falls Station, just finished.

Existing river-bottom conditions influenced the decision to resort to two cells of such diameter. Use of a greater number of smaller units might have curved the cofferdam farther upstream into the submerged remnants of an old timber structure, the original dam at this Connecticut River site. Expensive underwater cleanup was considerably cut down and total length of steel sheetpile driven was diminished by decision to build the oversized sheetpile cells.

The connecting links between cells were two sheetpile arcs of 21-ft radius. End connections to the existing structures were not that simple:

At its downstream end, where the cofferdam joined the stepped upstream face of the masonry dam, parallel lines of sheetpiling were

**TWO BIG CELLS cut the Connecticut River off so that the right abutment of the masonry dam at Holyoke could be cut away to accommodate an intake structure, headworks of the new hydro station. Note sump pumping arrangement behind cofferdam.**

driven to join dam and cofferdam cell. These lines of piling were tied together with ¾-in. round tie-rods, then the 25-ft wide space between them was concrete filled.

Some 200 ft away, where the cofferdam's upstream end tied to an existing retaining wall, similar treatment was used. The tied sheeting walls were also filled between with concrete.

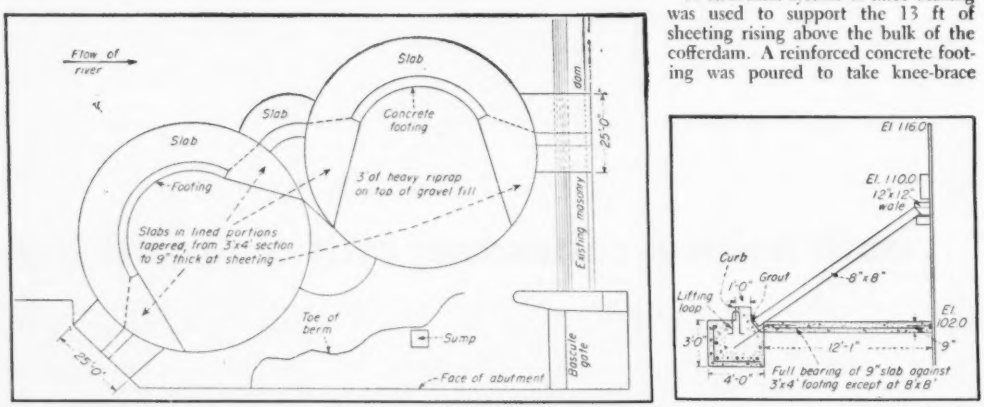
On completion of the job, when these two links were removed, all steel was pulled. But the concrete plugs it enclosed were cut down only to 5 ft below water level; their complete removal was not required.

Elsewhere, in the two big cells and their connecting link, sheeting was driven firmly to ledge. Some old timber cribbing had to be cleaned away to make this possible. Ledge was reached normally 30 to 50 ft below river level.

**• Added height, added protection—** Normal river level in summer is about El. 103 upstream of the dam, and it was at this level that sheetpiles were cut off on the land side of the cofferdam. On the river side, however, sheeting was carried up to El. 116. This additional height was necessary to give protection in event of an unusual rise in the river during the period of cofferdam use.

The main body of the cofferdam was put in place during summer of 1950. It was not until after the spring freshet of 1951 that this additional outboard height of sheeting was added.

A structural system of knee bracing was used to support the 13 ft of sheeting rising above the bulk of the cofferdam. A reinforced concrete footing was poured to take knee-brace




**BRACING DETAIL—Timbers and reinforced concrete components were there to take hydrostatic pressure. Concrete slab and curb also served to carry off leakage, keep it from cell's fill. Cofferdam plan (left) shows cells, connecting links and concrete slabs and footings that took thrust of the timber bracing behind extra height of sheeting facing the river.**

thrust. This footing was a segment of circle within the cell paralleling its upstream side. It was 3x4 ft in section and about 25 ft long—identical for each of the two cells. Its top was at El. 102, and its curved centerline was about 14 ft back from the upstream sheeting.

At the ends of the 25-ft long curved footing, concrete slabs were poured to transmit end-thrust out to the land-side sheeting. These slabs diminished in thickness from the 3-ft depth of the footing (at the footing) to a 9-in. thickness at the sheeting; and they fanned out in width as shown in the plan view of the cells.

The bracing based on this curved footing consisted of 8x8-in. timbers that hit the sheeting near El. 110, where a 12x12-in. wale had been bolted. The 8x8 braces were grouted to the footing at their lower ends.

• **Leakage handling**—Special preparation was made to keep leakage through the extended height of cofferdam from saturating the fill within the cells. A 1-ft concrete curb was put on top of the curved bracing footings. And the 12-ft space from footing to outer cell walls was paved with a 9-in. thick reinforced concrete slab.

This slab served a dual purpose: (1) It acted structurally in the bracing system, as a horizontal member between cell wall and curved footing. (2) It joined with the curb to form an impervious channel in which leakage water was cut off and carried along to the downstream end of the work to spill harmlessly out over the dam.

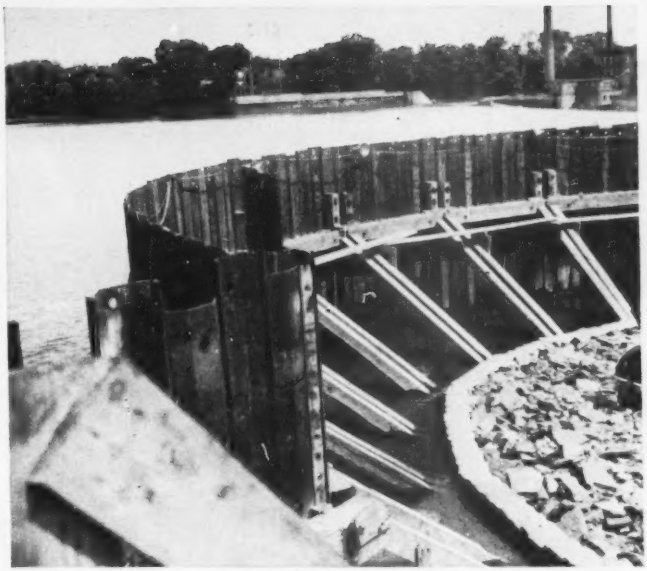
Maximum head of water held back by the cofferdam was 62 ft. Seepage that got through, to be collected at a sump within the construction area, was easily handled by a 14-in. pump at about 1,000 gpm, while two 10-in. pumps stood by.

• **Pile driving accuracy**—The odd diameter dimension of the large cells was fixed, of course, by the set number of piles that make up the circumference. The trick for the contractor was to drive 477 sheet piles in so large a perfect circle with the last pile able to close the last space.

On the first, the downstream cell, the closing sheet pile slid smoothly into place. The second cell had several piles founded on steeply sloping ledge rock that kicked them somewhat out of line. So when it came to driving that closing pile there was a bit of straining involved. But it went down.

It took 16,000 cu yd of gravel brought in by truck to fill the two cells and their connections.

• **Constructors, designers, owners**—



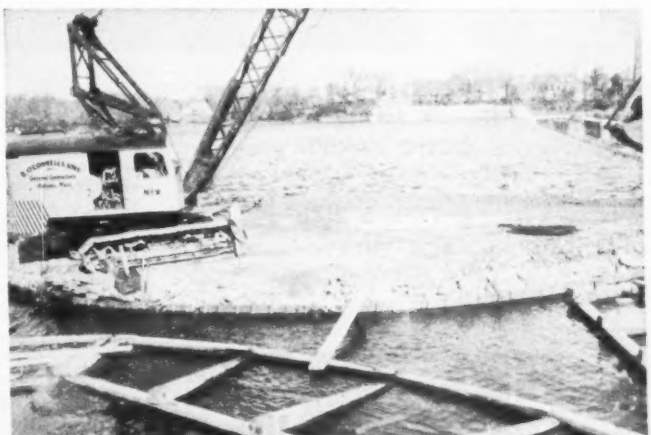
**EXTENDED SHEETING** on the river side of the cofferdam went up to an elevation 13 ft above river level. It was timber braced. Leakage was kept inside a concrete curb, shown here topped with sandbags.

The Holyoke firm of Daniel O'Connell's Sons, Inc., was general contractor on the project. On the job were: Wilfred L'Heureux, general superintendent on the power plant structures; Robert Fischer, tailrace and cofferdam superintendent; Ted Zavorski, field engineer.

Steel sheetpiling for the project was furnished on a rental basis by L. B. Foster Co., New York, who also furnished most of the photographs that illustrate this article.

Jackson & Moreland, Boston consultants, designed the hydro plant. Aiden Gierasch was their representative on the job. The Holyoke firm of Alderman and MacNeish, architects, designed the powerhouse building.

For the Holyoke Water Power Co., Everett R. Burkhardt, chief engineer, was in charge.



**READY FOR REMOVAL** the downstream cell had its river-side extension already removed when this photo was taken. Floating in foreground is timber template that guided sheeting into circular cells.

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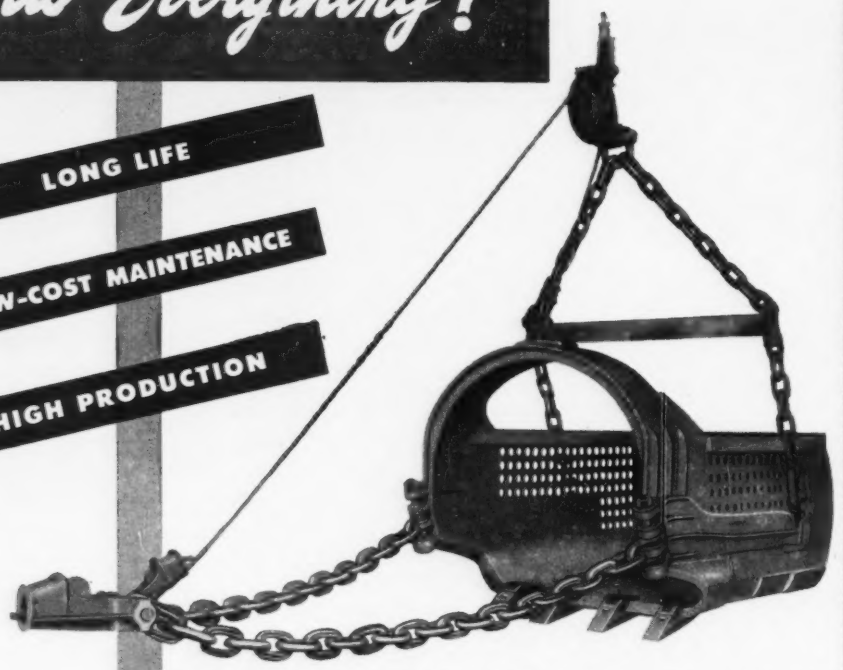

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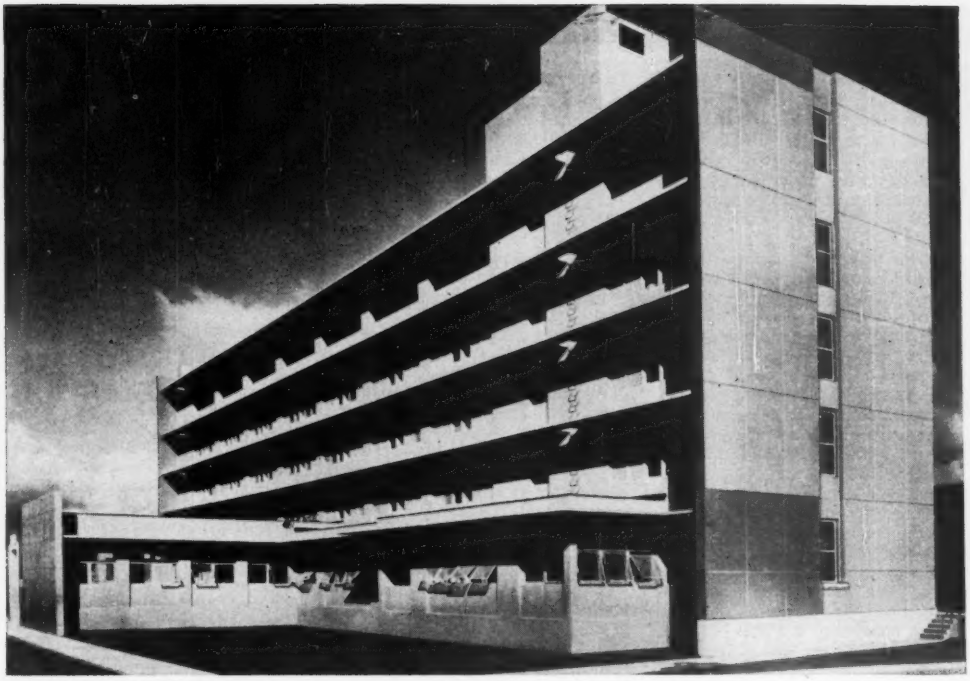


FIVE-STORY BUILDING in Honolulu is only one-bay wide, yet its flat-slab design keeps dead and live load deflections low.

# Flat-slab building only one-bay wide

**Walter H. Wheeler**
Consulting Engineer
Minneapolis, Minn.

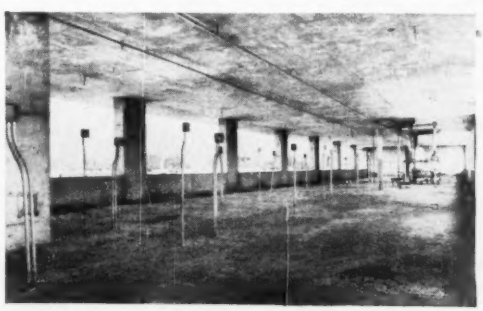
AN UNPRECEDENTED flat-slab type of design was successfully introduced in the construction of a Y.M.C.A. dormitory building in Honolulu, T. H. The five-story reinforced concrete building is only one-bay wide, yet its flat-slab floor system built integrally with reinforced concrete columns satisfies all deflection requirements.

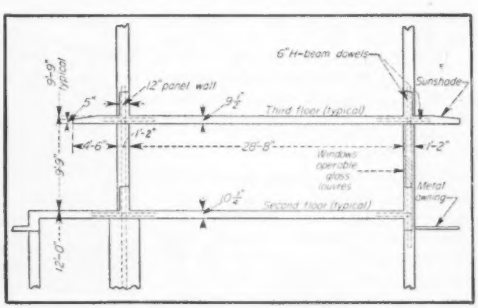
What made this possible was the adoption of the Smooth Ceilings System of floor and column design, in which welded steel grillages are embedded in the columns and slabs at their junctures.

This type of design was selected by the architects and engineers of the Y.M.C.A. dormitory after they had satisfied themselves that it could be used successfully in a building only one bay in width, and have some definite advantages.

The building is 30 ft wide out-to-out of 14x36-in. rectangular concrete columns; providing a 27 ft 8 in. clear span transversely between the columns. Lengthwise of the building the columns are spaced about 19 ft c-c.

Floor slabs at all but the second floor level extend 4 ft 6 in. outside of the columns to serve as sunshades. These cantilevered slabs, which are






THE SMOOTH CEILING, flat-slab floors have a clear span of 27 ft 8 in. between columns (at left). Typical structural details are shown in a cross-section through the single-bay structure (at right).

sloped down on the top to 5-in. thickness at their outer edge, have negligible effect on reducing any interior bending moments.

• **Earthquake resistant**—The building is designed to resist earthquakes, seismic stresses, with 4% of gravity as the applied horizontal force. As now constructed it is five stories high, with the future 6th floor slab serving as the roof.

At the main entrance the architects desired to have the first story columns turned 90 deg. to allow for a wider opening. This called for 6-in. H-section steel beam cores embedded in the concrete columns, and running continuously from the footings to 3 ft above the third floor (see sketch).

All other column heads have 6-in. H-beam dowels extending down 3 ft; also up 3 ft at the second and third floors.

The first story is 12 ft high floor-to-floor. All others are 9 ft 9 in. There are no wall beams but a 2-ft 6-in. high concrete panel wall was cast between the columns; while the space above it was left open to the bottom of the next slab. At the second floor there is a wall beam below the slab on one side of the building, but no sunshade.

Due to the higher first story and the larger gravity forces—plus correspondingly larger bending moments resulting from applied horizontal forces—the second floor slab was made 10½-in. thick. The third, and succeeding floor slabs were kept to 9½ in.

• **Deflections were low**—As a check on the stiffness of such a single-bay, slab deflections in the second and third floors were measured upon removal of their supporting shores and forms. Ames dial readings, taken on two column center lines about 38 ft apart where they intersected the center line of the building were:

| | Deflection at Point No. 1 | Deflection at Point No. 2 |
|---|---|---|
| 2nd floor slab | 0.018 in. | 0.018 in. |
| 3rd floor slab | 0.020 in. | 0.070 in. |

Dial readings to 1/10,000-in. were then substituted and the deflections of a 250-lb man walking across the floor to within 6-in. of each dial were found to be 0.0003 in. to 0.0004 in.

• **Designers and contractors**—K. B. Hirashima, engineer of tests, Honolulu, measured and reported the deflections. Merrill, Simms and Rochrig, were the architects of the building, and Pacific Engineering Co., Ltd. was the structural engineer. Pacific Construction Co., Ltd., were the general contractors, and the author was consultant on structural design.

# Precast walls speed defense plant

DETROIT—By using an exterior wall of precast concrete, Ford Motor Co. accelerated construction of its new tank plant going up on the outskirts of this city.

The plant is destined to assemble T-48 medium tanks for the defense effort and manufacture some of the parts for them. It occupies a manufacturing assembly area of about 1.5 million sq ft. Outside dimensions of the plant are 960 ft by 1,200 ft, with railroad facilities provided by 360-ft long wing extensions. An administration building, 780 ft long and two stories high, is located on the south side of the manufacturing building.

• **Details**—The enclosure of the manufacturing building consists of concrete walls up to 9 ft 8¼ in. above floor level, surmounted by sash and corrugated asbestos-cement. The bottom part consists of precast concrete panels.

The building has a steel frame, with exterior columns on 20-ft centers. This dimension determined the length of the individual panels. The height of the panels was dependent upon the outside grade below which they extended, and varied from 10 ft 7 in. in height at normal grade to 14 ft 1¼ in. in height at depressed railroad track and loading docks. All panels are 8 in. thick, reinforced with one layer of reinforcing steel, sufficient to permit handling of the panels. The panels vary in weight to a maximum of 14 tons.

• **Production line methods**—Actual casting of the panels was performed on a production-line basis. A casting form of concrete, 300 ft long and 30 ft wide, was used. Steel edge forms with wood separators were used to provide for the accurate lateral dimensions required.

The speed advantages of this method of construction were evidenced in the results. All the panels, including the special panels which required steel door frames, louver frames and the like cast integrally with them were cast in approximately four weeks, during good construction weather, while awaiting structural steel.

• **Day's work**—It was found that ten to twelve of the panels can be set in place in one day, not including grouting, bolting, etc. Each section, therefore, was placed in less than one hour, using a crew of six men, including the crane operator. Thus, a great deal of time was saved compared with construction of conventional type walls permitting the building to be enclosed as structural steel is erected. Estimates are that construction time was 25% to 40% of that required for a comparable brick wall.

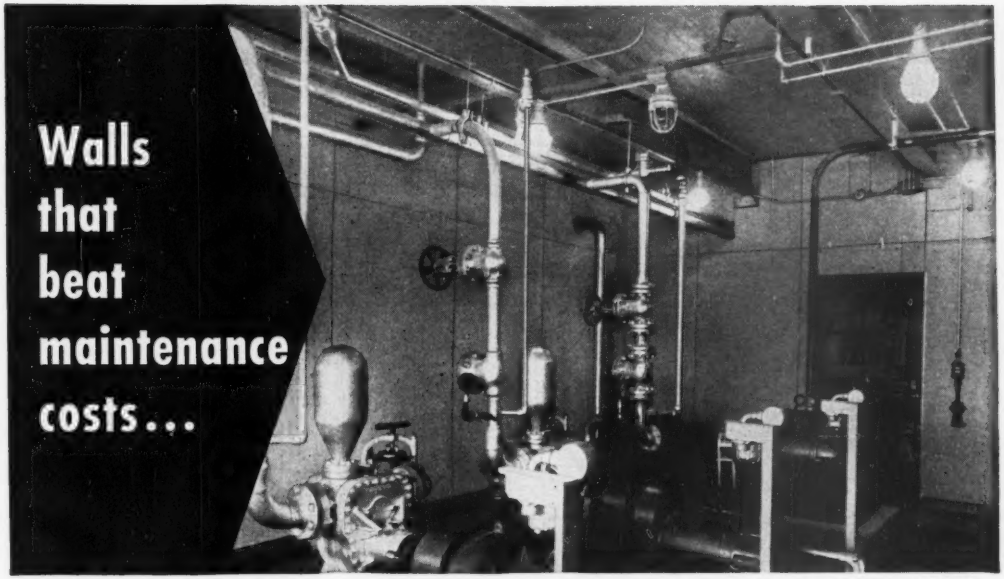
About 500 to 600 lin ft of the precast curtain wall is now in place. The balance is awaiting erection of structural steel.

Design strength of the panels is 2,750 psi in 28 days. Through the use of the vacuum curing system, this strength has been greatly increased.

The plant was designed by Albert Kahn Associated Architects and Engineers, Inc. and the construction is being performed by Darin and Armstrong, Inc.—all under the direction of Jas. A. McAlarney, director of Plant Engineering, Ford Motor Co. Construction began May 1, 1951; completion date is expected by next September.

**WALL PANEL** of precast concrete is lowered into place by a six-man crew. It will rest on grout pads. For fastening the panels to the steel frame, bolts to be fitted through clip angles welded to each column are anchored in inserts cast in the wall. (Ford photo)

# Walls that beat maintenance costs...



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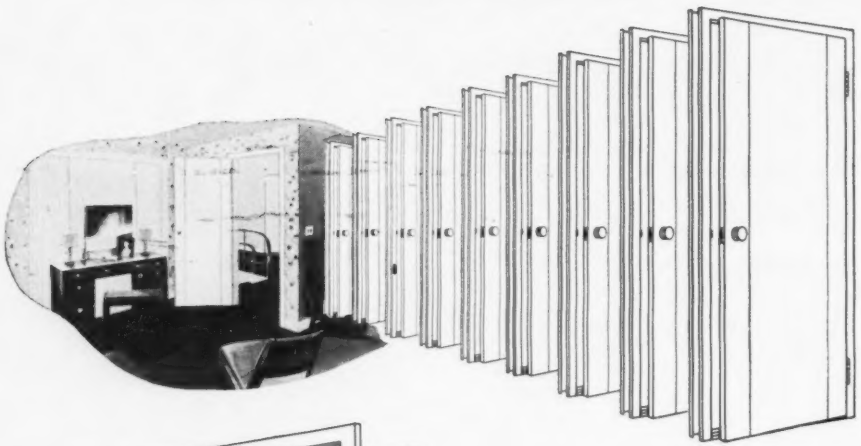

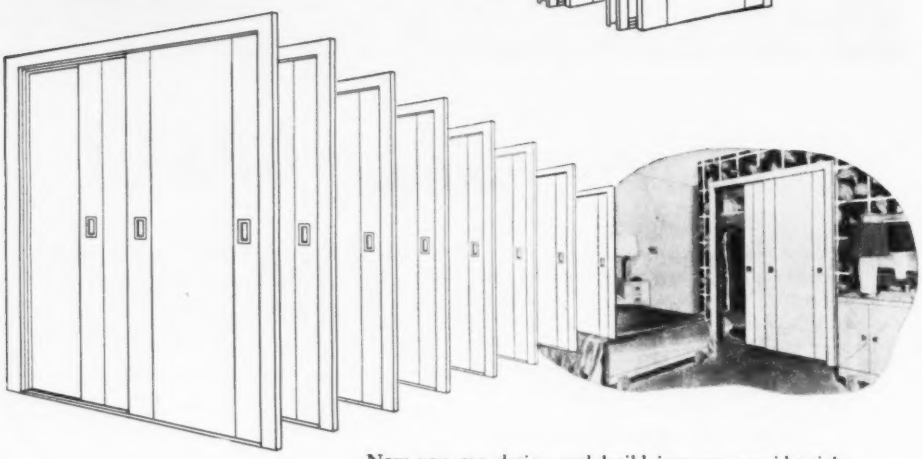

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## Planer takes wrinkles out of St. Paul street

WASHBOARD CONTOUR on an asphalt-surfaced street has been smoothed by St. Paul, Minn., in its first use of a resurfacing machine that heat-softens and planes as it goes.

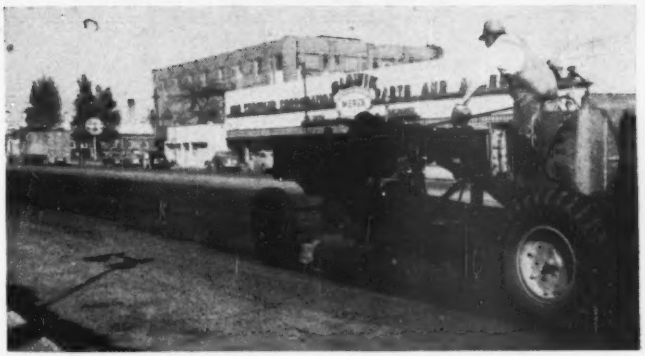
The whole 50,000-sq yd maintenance job, done on four lanes of heavily trafficked University Avenue, was completed more speedily and more cheaply with less interference to traffic than would have been possible by any other means giving as good results.

Three vehicles do the job, as performed by Dugdale Construction Co. of Omaha, contractor on the work. They move down the street in line at a 50 fpm speed: the "heater-planer" to soften and scrape off the old surface; a simple tractor-mounted scraper to spread loosened material into the low spots; and a heavy roller to compact and smooth. Three passes of these machines smooth the surface. A seal coat finishes the maintenance effort.

Cost of taking the waves out of the old surface has been 40 and 41 cents per square yard. Price of seal coat was 16 cents per square yard.

The price of ripple removal included cost of cutting out and filling cracks in the 15-year-old surface making up part of the work. The rather bad cracks were filled high with asphalt before the refinishing equipment went to work. In all, there were 1¾ miles of this relatively young pavement—a 95-ft roadway, curb to curb.

Elsewhere, 30-year-old sheet asphalt in generally worse shape got no special crack preparation since this older pavement will need complete replacement before long.



**HEATER-PLANER** softens and scrapes off bumpy surface, while . . .

**ELSEWHERE RUBBER** is added to the mix laid on test sections.

• **Planer explained** — The tool that does the trick, the "heater-planer," is a patented product of Spears-Wells Machinery Co, Oakland, Calif. The particular machine used in St. Paul was made available to the contractor on a license basis by Pavement Planing Co., Salt Lake City, Utah. It is mounted on the long wheel-base chassis of a motor grader. Flame temperature of its burner is 2,400 deg F, and width of the machine's scraper blade is 6 ft.

Heat of its flame penetrates and softens a ¼ to ⅜-in. thickness of the pavement and the hard-steel planer is set to scrape loose all material softened. A blade lasts about two days on the St. Paul street maintenance work where relatively hard aggregate is encountered in the pavement.

The seal coat that goes on after the existing surface has been worked over is a rapid-curing-low-penetration cutback asphalt designated as RCS-3, 0.20 gal per sq yd. Seal coat aggregate is a ⅜-in. maximum size applied at the rate of 20 lb per sq yd.

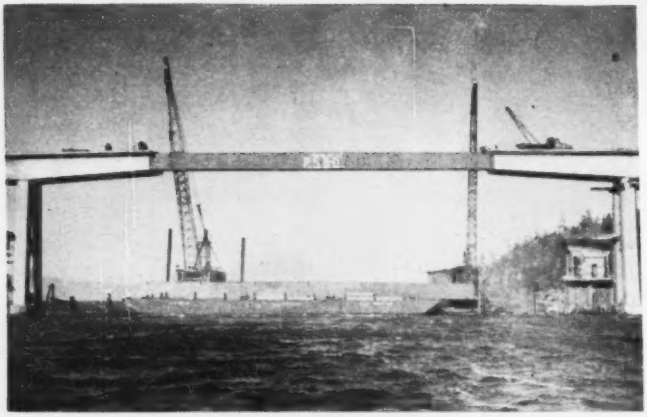
• **Elsewhere, rubber**—Where the same University Avenue (major St. Paul-Minneapolis link) needed complete repaving, asphalt containing liquid synthetic rubber has been laid on two test sections. On the 32-ft wide east-bound roadway, three blocks (1,900 ft) of old sheet asphalt have been ripped off the street's concrete base and replaced by the new asphaltic concrete to which the rubber had been added. And in the opposite direction the Minneapolis-bound roadway has a similar length of the mix.

Only difference between the two staggered stretches of rubber-asphalt pavement is that the west-bound part was purposely placed on a length with a sub-surface problem. Within these three blocks the street crosses a 3-ft thick layer of peat, down 8 or 10 ft, that was not removed when the street was built. St. Paul hopes to observe here the action of rubber pavement that has been placed over a base likely to settle.

On both stretches the continued ductility and penetration will be observed.

Thornton Brothers Co, St. Paul contractors who have done the repaving work, laid some 300 tons of the rubber asphalt per day—about 27,000 sq yd daily at 220 lb per sq yd. A 1½-in. binder and a 2-in. asphaltic concrete wearing surface were compacted with a three-wheel roller and finished with a lighter tandem roller.

Class A aggregate (granite or trap-rock) with a ½-in. maximum size went into mix. Penetration of the combined asphalt and rubber compound was about 85. Asphalt for the binder course contains 10% by weight of the rubber compound; in the wearing course rubber is 15% by weight.



**STEEL BOX GIRDER, 140 ft long, is lifted by two barge-mounted cranes to become part of a 250-ft span girder bridge. Concrete box girder cantilever spans, each 55 ft long, form the remainder of the unique combination main span.**

# Long box girder bridge combines concrete and steel

A LONG-SPAN GIRDER BRIDGE, nearing completion near Port Townsend, Wash., is an unusual combination of concrete and steel box girders. The two 140-ft-long steel box girders forming the suspended part of the 250-ft-long main span were raised early in December and the completed structure will be open to traffic early this year—possibly this month.

The structure also has the distinction of having the longest girder span of any bridge in the United States west of the Mississippi. However, a continuous three-span steel girder highway bridge across the Willamette River at Salem, Ore., will have a 252-ft main span when it is completed this fall.

The concrete and steel structure takes a two-lane (22-ft-wide) roadway across Portage Canal, an arm of Puget Sound, and connects Indian Island with the Olympic Peninsula. It is financed jointly by Jefferson County and Federal Military Access funds—the latter because of naval installations on the island. At present the only access to the island is by ferry.

Design of the steel portion of the structure follows closely the steel box girder design described in ENR April 12, 1951, p 34—except that the steel suspended span of the Portage Canal bridge is longer than the 110-ft span of the King County bridge. Thus, the new bridge has a wider and deeper section. It consists of thin steel plates welded into box shape. This is reinforced with vertical and longitudinal web stiffeners, longitudinal upper (compression) flange stiffeners, and diagonal bar corner stiffeners. These latter stiffeners are heavier and more widely spaced longitudinally than in the King County Bridge.

The reinforced concrete box girder approach spans are identical on each side of the structure. Included are 40-ft approach cantilevers, 170-ft approach spans and 55-ft main-span cantilevers.

Depth of the concrete box girders varies from 5 ft at the ends to 10 ft over the center piers. Both steel and concrete girders are 6½ ft deep where the two join. Maximum steel girder depth is 6 ft 8 in.

The all-welded steel box girders are suspended by bolting to the vertical part of heavy steel L-shaped members that have the horizontal part cast in and securely anchored to the concrete cantilever span.

The bridge was designed for Jefferson County by Homer Hadley, Seattle consulting engineer. Construction engineering is being done by Jefferson County forces under direction of Keith F. Jones, county engineer.

Manson Construction and Engineering Co., Seattle, is building the structure under a $321,042 contract of which $292,542 is for the bridge with the remainder for the fender system and navigation lights. The steel girders were fabricated by Puget Sound Bridge and Dredging Co., Seattle, and were erected by Manson Construction and Engineering Co.

## Public works officials protest NPA allotments

SAN FRANCISCO—Although this city has turned in 18,000 tons of steel to the scrap drive, city officials do not believe it is getting proportionate consideration from the National Production Authority when steel allotments are made for new construction, according to Public Works Director Sherman O. Duckel.

As a result, Francis J. Keesling, Jr., San Francisco representative in Washington, has arranged for local public works officials to meet with Robert Warner, assistant director of NPA, in San Francisco on Jan. 10 to discuss San Francisco's building problems.

The city, through contractors, has turned over to scrap the quantities of streetcar tracks dug up during modernization of the Municipal Railway. Besides the 18,000 tons already scrapped, the city expects to turn in 14,000 tons more.

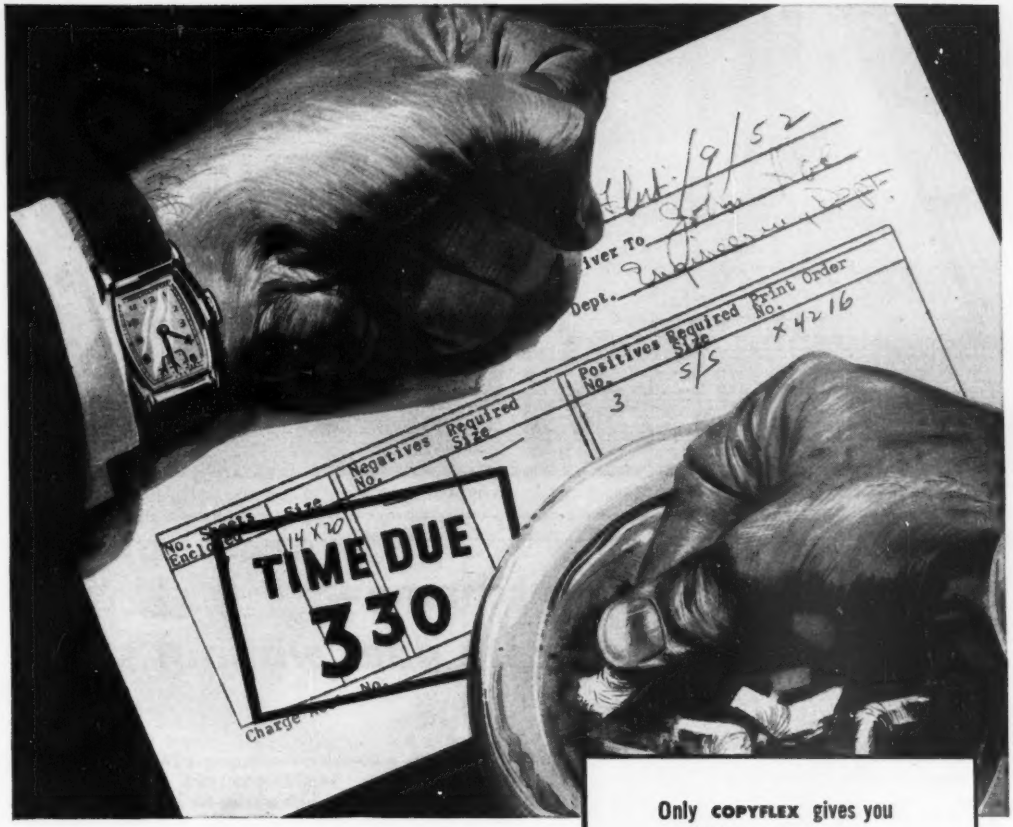
Up to this point, contractors removing the rails have been allowed to scrap them through their own channels, in exchange for a proportionate "break" to the city in the cost of the removal work. In a test case on the 22nd and 24th street track removal, the city paid the contractors the full price and took the steel to its own scrap yard. It was found that contractors had been allowing the city $35 to $40 a ton.

The NPA has twice denied San Francisco's application for steel to build a new firehouse in the Parkmerced area, the fastest growing part of the city. There is no fire protection there at present, according to Duckel.

Construction in San Francisco requires more steel than in other cities, Duckel declares, because land is hilly and scarce, and buildings must "go up in the air" for two or three stories. Builders also face problems of lateral stress due to threat of earthquakes.

The search for steel scrap has taken to the air in the Spokane area, with W. E. Stipe, operator of a scrap yard near Colfax, Wash., using his own light plane to scour the Palouse and Big Bend wheat districts in search of abandoned farm machinery, junked automobiles, and other metal salvage. Stipe has already spotted and shipped 1,000 tons of metal, and estimates that another 2,000 tons are waiting to be found, most of it from the air.

The aid of civic and farm organizations is also being enlisted in the campaign. Stipe reports the location of any scrap to the owners of the land, urging them to turn the metal in to aid the defense effort. Community funds, in many cases, benefit from the scrap metal "gleanings" which Stipe locates in his low-level reconnaissance flights.

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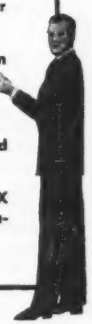

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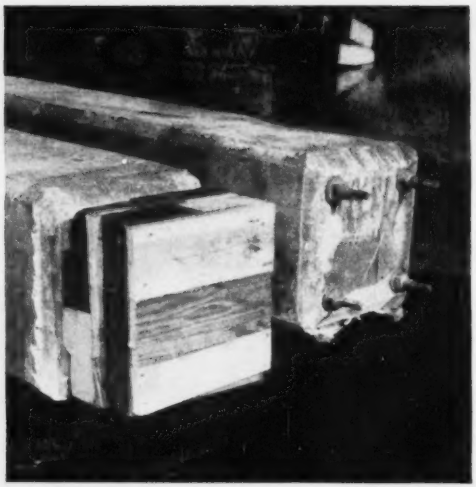
PRECAST CONCRETE PILE lifted by one-point pick-up showed no tension cracks or other visible distress. Prestressing rods were removed after driving, thus salvaging almost all steel.



WOODEN CUSHION BLOCK was used to drive the test piles. Longitudinal reinforcing rods had square ends above the threads to facilitate removal.

# Here's a steel saving scheme— Precast concrete piles without steel

A NEW STEEL SAVING PLAN has just been tested on the West Coast. It involves casting, handling and driving precast concrete piles, then removing the longitudinal reinforcing steel for re-use. Feasibility of this approach was demonstrated by tests on 40-ft-long piles by Ben C. Gerwick, Inc., San Francisco heavy construction contractor.

The thinking behind these tests is this: In many foundations requiring piles, particularly building foundations, pile loading is axial with no significant bending stress. In such case, longitudinal steel may be needed in precast piles only to take handling and driving stresses. Accordingly, in the recent tests the longitudinal reinforcing steel was arranged so it can be removed after the pile is in its permanent position.

Longitudinal reinforcing consists of one or more threaded steel rods that fit loosely in sheet metal or paper tube sleeves cast in the concrete. The rods are anchored top and bottom with nuts and plate washers. After the concrete has attained required strength, the rods are tensioned to a specified unit stress to prestress the pile for handling and driving.

Test piles incorporating this unique idea were cast, successfully lifted and driven to refusal without any visible cracks or other evidence of distress. Rods used in these tests were of mild steel. Normally, high strength steel would be used for its higher allowable working stress. This would permit greater prestress in the concrete pile.

One of the 18 x 18-in. test piles was lifted with a three-point pick-up that resulted in a calculated maximum moment with no allowance for impact of 92,000 in.-lb. The four 1-in. dia rods were tensioned with a torque wrench to 20,000 psi resulting in a unit compressive stress in the concrete of 136.3 psi. Considering the concrete under prestress as a homogeneous section, the gross fiber stress in the concrete due to bending was 94.5 psi. Deducting the amount of prestress, when the pile was lifted as described the net stress on the tension side was therefore 41.8-psi compression.

A second test pile was lifted with a single point pick-up 9 ft from the butt end. The calculated maximum moment under this loading, again with no allowance for impact, was 414,000 in.-lb. In this case the four 1-in. dia rods were only tensioned to 12,000 psi, resulting in a unit compressive stress in the concrete of 82 psi. The gross fiber stress in the concrete from the lifting stress was 426 psi. The net stress in the concrete on the tension side for this severe loading was therefore 344-psi tension.

The fact that no tension cracks developed demonstrates, in the opinion of the testing contractor, that concrete can, and often does, take appreciable tension without cracking. This test pile was poured with a six-sack mix, resulting in a 28-day strength of 3,500 to 4,500 psi.

This scheme for saving steel in precast concrete seems to have possibilities for wide application. The contractor reports no particular problems in manufacturing the piles, in tensioning the rods, handling or driving the piles, or in removing the rods.

An impact-type wrench was used to loosen the nuts, and the rods were provided with square ends above the upper threads to facilitate unscrewing the rods from the lower nuts. The only steel that remain permanently in the pile are the lower nuts and plate washers and the stirrups and dowels if used. All other steel is salvaged.

If called for in the structural design of the building, stirrups such as square wrapped spirals can be provided. Or some longitudinal steel could be cast permanently in the pile with other removable steel provided too.

This process for removing the prestressing steel was developed by Ben C. Gerwick, Inc. in connection with a precast concrete manufacturing plant at Petaluma, Calif.

K. P. Bilhuer, president of Vacuum Concrete, Inc., proposed a similar idea for saving steel at the First U. S. Conference on Prestressed Concrete (ENR Aug. 23, 1951, p 24).

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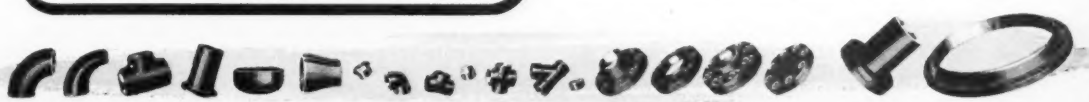

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# The end of Marshall Plan assistance sees rapid recovery under way in Europe

On Dec. 31 the books were closed on the Marshall Plan, with the end of the Economic Cooperation Administration whose functions are now taken over by the new Mutual Security Agency.

ECA has expended nearly $15 billion in grants and loans in carrying out the European recovery program. To this the countries of Europe have added the equivalent of another $9 billion in their own currencies to match the American grant-aid dollars. A great deal of this was for construction.

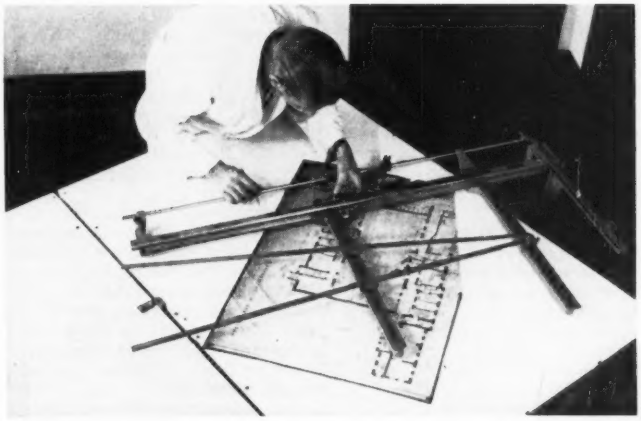
In their turn, the Marshall plan countries in the last three years completed, or are pushing to completion, a total of 27 major projects for the increase of power and 32 major projects for expanding the production of iron and steel. All of these have called for engineering and construction, and the United States has given much technical aid.

Similarly vital to Europe's defense has been the rehabilitation of the continent's run-down and war-smashed railway network, with approved projects for use of counterpart funds totaling more than the equivalent of half a billion dollars. Moreover, steel production has risen from less than 31 million tons in 1947 to nearly 60 million in 1951.

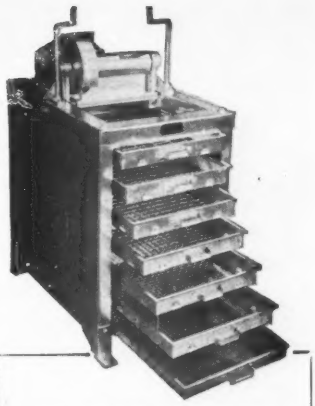
In 1947 Europe's average monthly electrical production was 13½ million kh. In mid-1951 it was 20½ million.

## Brazil constructs first multi story parking garage

Brazil's first multi-story parking garage has been opened in downtown Sao Paulo with facilities for 200 vehicles. The structure, designed and built by Assumpcao Engenharia e Construcoes S. A., has eight floors in the front half and nine floors in the rear. The "stagger" between levels is 1.5 meters and connection is by ramp with a width of six meters and an outside diameter of 20 meters. The basement of the rear section houses a washing and lubricating post. For good ventilation the entire front and rear faces of the building are equipped with adjustable asbestos-cement louvers. The building has a frontage of 21 meters and is 33 meters deep.



NEW DRAFTING INSTRUMENT—A new German-designed drafting instrument "translates" plans and elevations into perspective drawings, the nature of which is not dictated by the available blueprint, but is completely up to the draftsman. Possible applications are in architecture, city planning, major building construction, ship building, and graphic arts. A fairly unskilled worker, it is claimed, can produce a true perspective of any one of a large number of objects directly from the blueprints. This makes possible visual presentations when the finished product is not yet available. Perspective, direction and height from which viewed can be selected at will. The work is reproduced on the table at the left of the instrument, which is made by Franz Kahlmann at Wilhelmshaven.

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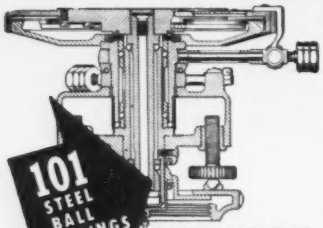


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**International . . .**

# Canada's waterpower grows apace

During the year 1951 extensive progress in waterpower development was made in the Dominion of Canada. In his recent year-end summary Resources Minister Robert H. Winters reported 881,250 hp came into operation during the year, while a number of important developments were placed under preliminary construction.

Although the largest increase in capacity took place in Quebec, developments were well distributed across the country. A condensation of the year's activities in central station construction and in distribution facilities, province by province, follows:

• **British Columbia**—The British Columbia Electric Co., Ltd., completed the installation of a new unit of 70,000 hp driving a 62,500-kva generator in the Buntzen No. 1 plant.

The British Columbia River Power Commission brought into operation its Whatshan plant of 33,000 hp in two units under 710-ft net head, each driving a 12,500-kva generator. The project which has an ultimate capacity of 66,000 hp, involves a storage dam on the Whatshan River and a 2½-mi tunnel leading to a powerhouse on Lower Arrow Lake.

The Aluminum Co. of Canada began preliminary work on the Mechako-Kitimat development, beginning a project of outstanding importance to the economy of the province.

• **Yukon Territory**—The Northwest Territories Power Commission is constructing for operation this year a development of 3,000 hp at 110-ft head on the Mayo River. The project includes a storage dam on Mayo Lake 20 miles upstream, upon which work is well advanced.

• **Alberta**—The installed capacity of waterpower plants in this province was about doubled during 1951 with the completion by Calgary Power, Ltd., of the Spray Lakes scheme which involves three new plants, in all 100,600 hp.

Calgary Power completed extensions to its main transmission lines—202 miles of 138-kv line and 180 miles of 13-kv to 66-kv.

• **Saskatchewan**—The Saskatchewan Power Corp. completed the installation of a new steam turbo-generator of 15,000 kw capacity in its Estevan plant. The corporation extended its transmission network by 135 miles of 69-kv line and by 671 miles of 24-kv.

• **Manitoba**—The Winnipeg Electric Co. has under installation in its Seven Sisters plant on the Winnipeg River the sixth and final unit at 37,500 hp, and operation is scheduled for this year. This will bring the turbine capacity of the plant to 225,000 hp under 66-ft head, and the generator capacity to 195,000 kva.

The Manitoba Power Commission has provided electrification for an additional 5,000 farms and to 19 towns.

• **Ontario**—The last of 8 units at the Des Joachims generating station was placed in service last February, making the total turbine capacity 496,000 hp.

For the Sir Adam Beck—Niagara generating station No. 2 plans are well advanced for a second generating station at Queenstown to contain seven units totaling 735,000 hp. The intake canal uses a 45-ft dia tunnel driven 28,600 ft through rock and an open canal section about 200 ft wide and 11,800 ft long.

• **Quebec**—Because of the current expansion in industrial activity and the rapid growth in power loads in this province, the construction of hydroelectric plants has been accelerated. During the year a total of 461,700 hp was brought into operation and about 1,500,000 hp is under construction for completion by 1955.

The largest single addition to plant capacity was that of 223,000 hp in four units in the Beauharnois No. 2 powerhouse of the Quebec Hydro-Electric Commission on the St. Lawrence River. The ultimate capacity, to be reached probably in 1953, is 660,000 hp in 12 units, 80 ft head.

The Shawinigan Water and Power Co. added three units each of 65,000 hp to its La Trenche plant on the St. Maurice River.

There are many other important developments in Quebec by the Aluminum Co. of Canada, Price Brothers & Co., the Maniconagan Power Co., the Northern Quebec Power Co., the Ste. Marguerite Power Co., the Pembroke Electric Light Co., Ltd., the Southern Canada Power Co., the Gatineau Power Co., the Quebec Power Co. and others.

• **Nova Scotia**—Two hydraulic plants are under construction for operation this year. The Nova Scotia Power Commission completed about 200 miles of new distribution lines, and has under construction 97 miles of 66-kv lines.

• **New Brunswick**—The New Brunswick Electric Power Commission proceeded with the construction of its development of 27,000 hp in two

(*Continued on page 49*)

## International . . .

units under 75-foot head on the Tobique River, to begin operation next year.

• **Prince Edward Island**—The Maritime Electric Co. completed the installation of a unit of 7,500 kw in its steam plant at Charlottetown.

• **Newfoundland**—The Newfoundland Light and Power Co. completed its new plant of 13,000 hp on the Mobile River.

The Anglo-Newfoundland Development Co. Ltd. is modernizing its waterpower plants on Exploits River.

• **Labrador**—The Iron Ore Co. began preliminary construction at Manihek Rapids in Ashuanipi River—an initial installation of 12,000 hp in two units under 34-ft head.

Mr. Winters estimates that more than 1,700,000 hp of new hydroelectric capacity will be brought into operation in Canada before the end of 1953 and an additional 2,000,000 hp by the end of 1955.

## Canadian National spends millions on construction

More than $600 million will be spent in the immediate future on industrial plant and development along the lines of the Canadian National Railways, it was announced in his annual review by Donald Gordon, chairman and president.

In explanation of the need for this expansion, Mr. Gordon said: "The growth and development achieved during the last year represents the continuation of a trend which began with the onset of the second world war and which has proceeded without interruption."

## Pump mill planned for New Zealand

A proposal under which two American companies and a third in New Zealand jointly will build the first mill in that country to provide newsprint and chemical pulp. It is for the Tasman Pulp and Paper Co.

The project, to cost $45 million, will be undertaken by Merritt-Chapman & Scott Overseas, the Raymond Concrete Pipe Co., both of New York, and the Fletcher Construction Co. Ltd. of Auckland. The mill, to be built 165 miles southeast of Auckland, will have a daily production of 150 tons of bleached sulphate pulp and 175 tons of newsprint.

The three companies, which are now building a 4-berth ocean freight terminal at Auckland, also will build a sawmill with a daily capacity of 100,000 board ft; 500 houses for employes; and a wharf at Tauranga.


# *Portugal* harnesses flood waters for power, irrigation

**Flood control, irrigation and electrical power—vital needs in southern Portugal—will be provided by the Barragem de Campilhas, an earth-fill dam now being built in Province Alentejo for the Direccao Geral dos Servicos Hidraulicos.**

**Societe Coloniale de Construction, S.A., "SOCOL" of Lisbon, worldwide contractors handling all 981,000 cu. yds. of earth involved, reports their *most effective earthmoving machines have been 2 electric-control C Tournapulls* (scraper capacity, 13.5 yds.; speeds to 35 m.p.h.).**

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**J. E. Villars, SOCOL director, reports that under difficulties, "Tournapulls have outperformed and outproduced all similar equipment."**

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# MUNICIPAL

THE ALAMO CITY—San Antonio's skyline is backed by miles of homes set upon the hillsides stretching to the north, east and west along the river valley.

## San Antonio needs $36,445,000 for face-lifting, says committee

The 23-member Slum Clearance and Urban Redevelopment Committee of San Antonio, Tex., has recommended that the Alamo City spend $36,445,000 in five years for a general overhauling and face-lifting.

The city council approved the 10-point program, but its approval does not mean San Antonio will embark immediately on the project. It would take a bond issue approval by the taxpayers to finance the suggested spending.

The master-plan is based on a 15-month engineering survey conducted by Walter H. Lilly and Associates for the committee, which has Albert Steves III as its chairman. Other members are Paul Adams, W. B. Arnold, Travis Bailey, E. A. Baugh, Kenneth L. Browne, Fred Buchek, E. J. Burke, Jr., J. L. Dickson, J. B. Etheridge , Rabbi David Jacobson, Ruben Lozano, W. W. McAllister, A. M. McNeel, Dr. P. I. Nixon, Sr., the Rev. H. Paul Osborne, Frank Robertson, Joe S. Sheldon, Henry Lee Taylor, Alex R. Thomas, H. C. Thorman, the Rev. C. Tranchese and H. B. Zachry, all prominent San Antonians.

• **Top priority for sewers**—The committee gave top priority to sanitary sewers, the supplying of which in some sections of the city is regarded as San Antonio's No. 1 problem. A total of $4,000,000, recommended to be obtained from revenue bonds, was set aside for this project. It is expected that the city's very high disease rate, referring here to infant diarrhea in particular, could be lowered considerably if the hundreds of homes now without such facilities were connected to sanitary sewers. The bonds would be serviced by establishing a monthly charge for sewer service.

Other projects, in the order of their priority and estimated cost, were listed as follows:

Drainage, $10,000,000, to correct "major deficiencies" in the city's storm sewer system.

Flood control, $7,500,000, to be carried out by the U. S. Engineers.

Streets and bridges, $3,600,000, for both repairs and extensions.

Rights-of-way for expressway (now being built) and other streets, $7,000,000.

Traffic signal system, $500,000, to replace the antiquated lights.

Parks and recreation, $1,000,000.

New health buildings, $345,000, to include a main building and four branch clinics.

New city hall and jail, $1,500,000.

Slum clearance and urban development, $1,000,000, which would constitute the city's one-third share in the cost of slum clearance projects possible under earmarked federal funds.

The $4,000,000 sanitary sewer item also would include expansion of the city's sewage disposal plant, which is processing 10,000,000 gallons of raw sewage a day above its rated capacity. Towns and property owners along the San Antonio River south of San Antonio claim the city is polluting the river with raw sewage. Of the $4,000,000, at least $2,500,000 would be spent for extension of sewer lines, and $1,500,000 for enlargement of the treating plant.

The committee said the $10,000,000 recommended for the construction of storm sewers "is considerably less

(*Continued on page 52*)

When the earliest oxcart creaked and groaned its way in man's most ancient effort at wheel transportation, the driver who shouted the primitive equivalent of "gee" and "haw" had the benefit of power steering. For, he only guided the oxen with his voice or whip—the animals supplied the power for turning.

These days about all we see of the ox is the hamburg in the corner joint, but in taking the animal out of transportation we have loaded part of its work on the drivers of trucks and other vehicles. In trucks without power steering, the driver's muscles have to supply the turning effort. The power must come from his arms, shoulders and back.

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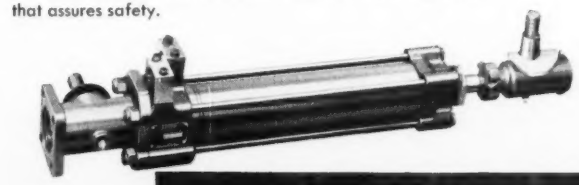

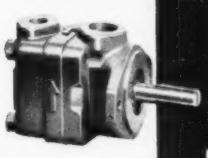

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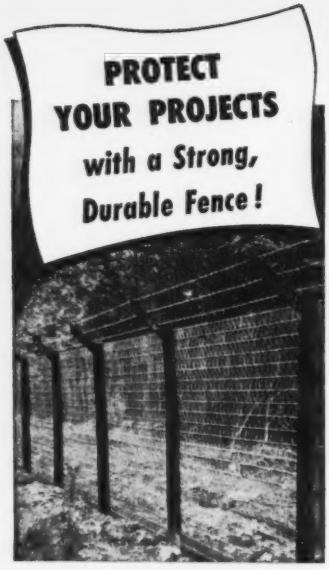


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## Municipal . . .

ALBERT STEVES III
Committee Chairman

than the estimate of engineers of the cost of a complete job, but is considered all that it is economically possible to spend for this purpose at the present time."

• **Flood control**—In its discussion of the flood control program, the committee urges not only the widening of the channel of the San Antonio River and its tributaries, but also that it be cleaned at least once each year to prevent vegetation and trash from slowing the flow of flood waters.

Chairman Steves has warned the council that if the plan is not approved soon, the city would lose $1,970,000 allocated by the federal government for slum clearance and redevelopment.

• **Chairman's statement**—Commenting on the survey, Steves said: "Its recommendations are hardly new or startling. Our muncipal household is run down and in many cases shamefully inadequate. The committee emphasizes that this report is not a recommendation for a bond issue of any amount whatsoever. It is merely a factual presentation of the city's minimum needs, determined by professional engineers. The length to which we desire to go to restore San Antonio's sorry physical properties must rest with the taxpayers themselves. Adoption of the master plan by the city will in no way mean that the city is committing itself to the projects proposed."

Most of the spending, according to the committee's recommendations, would take place in 1953, the first year of the program. During that year, the committee recommends that the city spend $11,745,000. In 1954, a total of $7,400,000 is to be spent, with $7,300,000 the following year and $3,000,000 in each of the two years.

If the entire bond issue necessary should be favored by the taxpayers, the city would approach the legal limit of bonded indebtedness on total assessed valuations.

The committee figures that the city will have a total bonded indebtedness of $45,144,500 in 1957. The 1951 assessed valuation was $446,935,030.

## Rye opposes evasion of residence zone act

The town of Rye, N. Y., has undertaken to prevent construction of a natural-gas compressor station in a high-class residential zone by the Transcontinental Gas Pipe Line Corp, which proposes to build the station under the powers of eminent domain granted to it by the Federal Power Commission.

The gas company holds that the powers granted to it by the federal government when the FPC authorized a 35-mile extension of its natural gas line through Westchester County are superior to the state law under which the town of Rye was zoned for residential and industrial purposes. It also maintains that enforcement of the zoning law would be an unlawful interference with interstate commerce.

The company operates a natural-gas line from Texas to New York. As part of its extension program it acquired a 32-acre site in the AA residence zone in Rye on which to build a compressor station. When it applied to the town for an amendment to the zoning ordinance to permit this work the town refused on the ground that construction of a compressor station in a residential zone would be a safety hazard, also that it would depreciate all the surrounding high-class residences.

The town authorities also claim that rights granted to the pipe-line company to extend its line through Westchester County did not give it the right to build a compresser station in a residential zone rather than in a commercial zone.

The town now has asked the federal court to dismiss a suit begun by the gas company to prevent enforcement of the zoning ordinance.

Examination of publications relating to zoning laws reveals no closely paralleled court decisions, hence it appears in this suit could have a far-reaching effect. In 1944 the U.S. Circuit Court of Appeals held that the town of Chester, Pa., could not keep the Public Works Administration from building houses there for defense workers that did not comply with the city's building and zoning regulations. But that decision was predicated on the national emergency caused by World War II.

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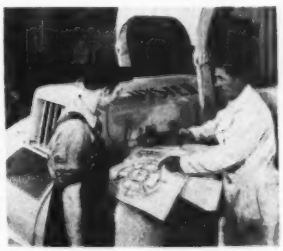

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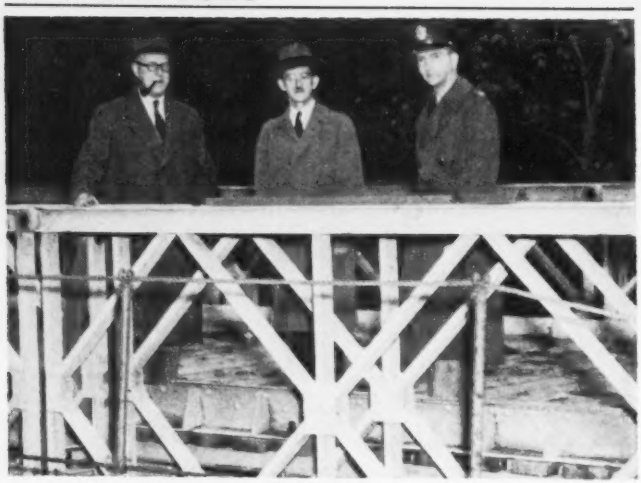
# MEN AND JOBS



MILITARY BRIDGE EXPERTS CONFER—Evidence that the effective collaboration on military bridging of World War II still exists came to light recently through a visit of Sir Donald Bailey, of Bailey bridge fame, to the Army Engineer research station at Ft. Belvoir, Va. Here Sir Donald stands (left) on one of his bridges with U. S. experts and World War II collaborators Howard M. Mullins and Col. Desloge Brown. Sir Donald (he was knighted for inventing the bridge) is superintendent (bridging) of the Military Engineering Experimental Establishment at Christchurch, Eng. At Ft. Belvoir he said that very encouraging progress is being made in both our countries on new types of military bridging and improved design.

## A.E.C. power commissioner

Guy W. Thaxton is new power engineer in Atomic Energy Commission's Division of Construction and Supply. He comes to AEC from Defense Electric Power Administration where he has been serving in the power coordination and planning branch.

He is to be responsible to the division director for headquarters staff for coordination of all matters pertaining to power supply for AEC operations, advising and assisting operating divisions and operations offices. A graduate of Mississippi State College, his experience includes five years teaching electrical science, the last three as assistant professor of electrical engineering at Georgia Tech. He has also been with Westinghouse Electric Corp., Mid-South Public Service Co., Tennessee Valley Authority, Rural Electrification Administration, and General Cable Corp.

## P. C. Rutledge comes to N. Y.

**Philip C. Rutledge,** head of the civil engineering department, Northwestern University, has joined the New York consulting firm of Moran, Proctor, Freeman & Mueser, whose name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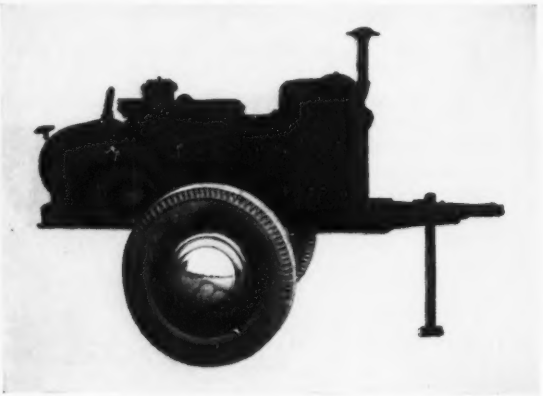

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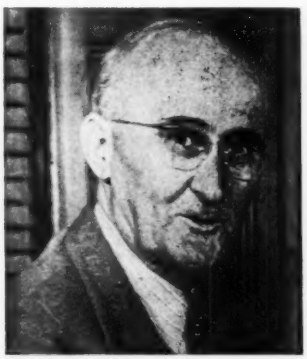
was changed Jan. 1, to **Moran, Proctor, Mueser & Rutledge.** George L. Freeman, whose name is dropped, retired in May, 1950, after 20 years with the firm.

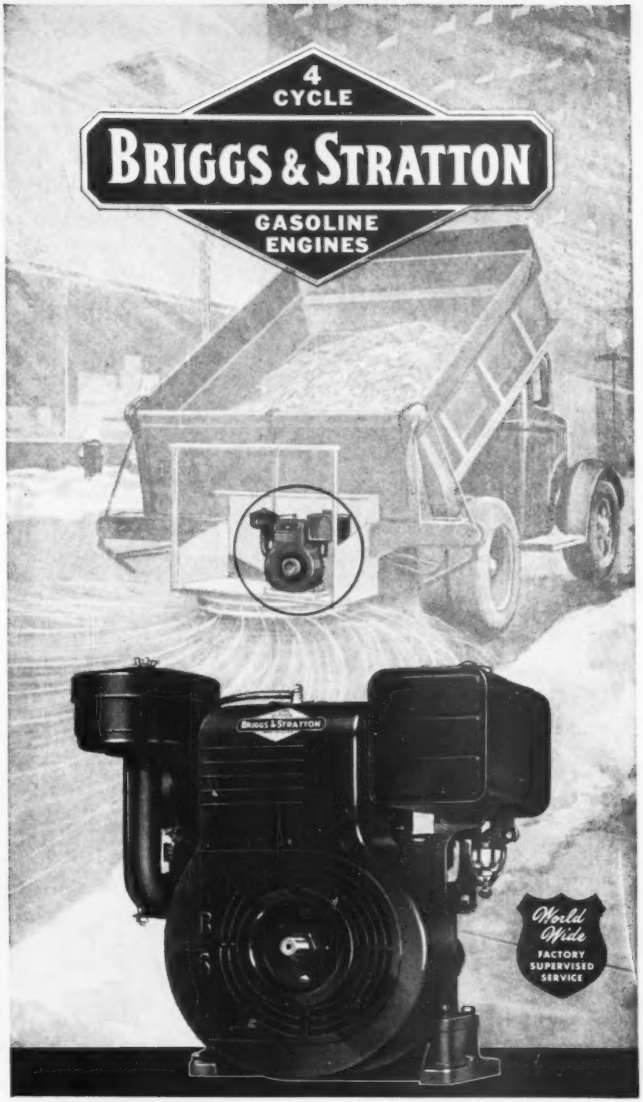
Prof. Rutledge, one of the nation's top experts on soil mechanics and a consultant in that field as an adjunct to his teaching, was graduated from Harvard in 1927. After several years on construction and structural engineering work, he taught soil mechanics at Harvard (1933-37) then at Purdue until 1943 when he went to Northwestern. Since about that time, too, he has been special consultant to the Chief of Engineers on airfield design and construction. In recent years his consulting practice has covered foundation problems for factories, power plants, levees and sewage treatment facilities.

## New Supervisor Named

John Kuhn, superintendent during the last two years on the difficult and deep foundations for the Yorktown Bridge in Virginia, has been named general superintendent of construction of the Kansas City Bridge Co., with headquarters in Kansas City, Mo. This company in combination with the Massman Construction Co. was the contractor on the Yorktown Bridge.



**LIFE BEGINS AT 70**—Julian Hinds, retired from his long time job as general manager and chief engineer of the huge Metropolitan Water District of Southern California only to start again on a new job. Temporary and parttime, it nevertheless carries the title of general manager and chief engineer of the United Water Conservation District. The offices are in Santa Paula, Calif. Robert B. Diemer takes Mr. Hinds' previous job. A C.E. graduate of the University of Missouri, he has been with the Metropolitan Water District since 1929.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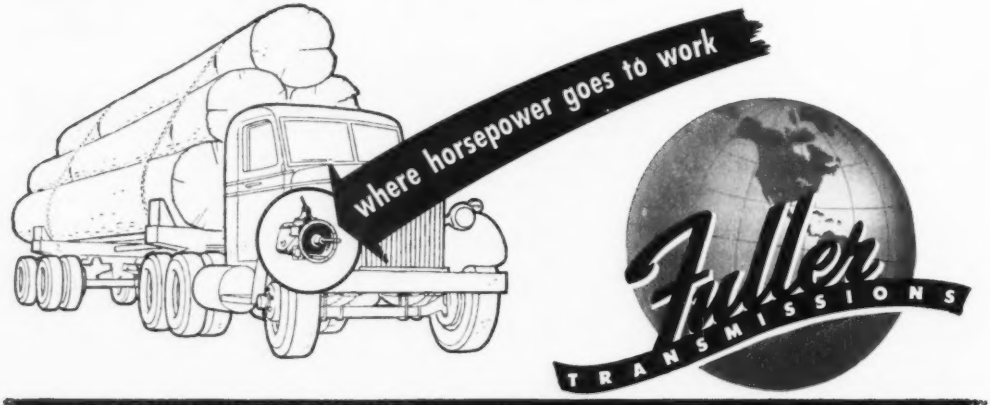


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# Engineers say "egg-crate" construction will cut cost of building

Egg-crate construction shows great promise of reducing building costs of multistory apartment houses, reports Howard T. Fisher and Associates.

Bearing walls in this type of construction are used both as structural framework and partitions. Preliminary plans developed by the consultants consider a tall building in which the elevator stops only at every third floor. Thus, tenants walk up or down at most one story to their apartments. Initial cost of this elevator installation may be considerably below that of the conventional type.

This conclusion is one of several reached by the Fisher organization after a study of multistory apartment structures sponsored by the Housing and Home Finance Agency. Fisher made the study under a subcontract with Illinois Institute of Technology, which was the prime contractor. The findings are summarized in Progress Report No. 1, copy of which is on file at HHFA headquarters in Washington, D. C.

• **Cost trends**—Special attention is directed in the report to cost trends of the New York City Housing Authority and the Chicago Housing Authority.

The consultants find that NYCHA construction costs have been declining since early 1949. They attribute this to growing experience of the authority in developing design and construction techniques for building more economically. Credit also should be given to contractors in the New York area, they say. With each additional project, these builders seem to have developed greater efficiency in organization and construction.

Average costs of seven projects analyzed are broken down as follows:

| | |
|---|---|
| Excav. & foundation | 12.5% |
| Concrete frame | 24.2% |
| Ext. walls, int. partitions | 19.5% |
| Windows, doors, roofing, carpentry, hardware | 14.6% |
| Plumbing | 11.4% |
| H'tg. & ventilating | 10.2% |
| Electrical | 4.4% |
| Elevators | 3.2% |

NYCHA has cut costs by (1) providing simple units; (2) carefully studying space layouts for greater efficiency; (3) scheduling bidding to foster maximum competition; (4) establishing standard specifications; (5) cooperating with contractors; and (6) encouraging assembly-line techniques (ENR March 23, 1950, p. 200).

Due to the limited number of projects constructed in Chicago, the CHA does not show a similar cost trend.

• **Prefabrication cuts costs**—The consultants report great cost-savings possibilities in prefabrication in every part of a structure. Advantages result from reduction in labor costs, better control of materials and quality, repeated use of forms for concrete work, speed of erection and non-dependence on weather conditions, to mention a few.

The consultants, for example, see many advantages in prefabricated panels for exterior walls, good appearance, lightness, mass-production, easy installation, minimum need for repair, impermeability, high resistance to exposure, and elimination of plaster, sometimes also of painting. Definite savings may be obtained with lightweight stainless steel and glass panels, they believe.

Choice of materials for interior walls, aside from fire-resistance requirements, depends on cost, durability and practicability. The consultants report cost differentials between most of the existing materials are not large. Many provide good architectural treatment without the need for plaster, they claim.

Floor products studied include prefabricated steel decks and lightweight slabs. Fisher points out that none of these products may turn out to be best for all conditions and purposes. It is likely that each will have an optimum range of use, depending on the type of layout, frame, spans, location of job, and construction season.

## Cathodic protection of underground steel

Underground corrosion of steel pipe has been estimated to cost $600 million annually in the United States. Workers in this field have learned that such corrosion can be greatly reduced by cathodic protection techniques, in which the structure is maintained at a suitable negative electrical potential.

A recent study by W. J. Schwerdtfeger and O. N. McDorman of the National Bureau of Standard's corrosion laboratory provides a better understanding of the mechanism of

(Continued on next page)

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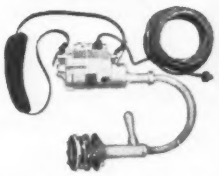

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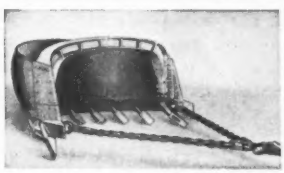

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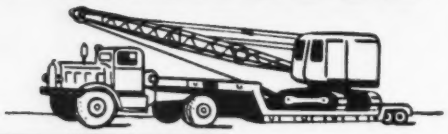

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## Research . . .

this method of inhibiting underground corrosion. The NBS study centered around laboratory determination of the optimum potential to be maintained for effective protection. By eliminating uncertainties inherent in field measurements, NBS was able to determine an optimum protective potential having a firm scientific basis. The value arrived at—minus 0.77 volt referred to a saturated calomel electrode—was confirmed by weight-loss measurements on electrodes maintained at the selected potential in five corrosive soils.

Normal corrosion of iron and steel underground is largely an electrolytic phenomenon. When iron is exposed to the soil, local differences in electrical potential develop at the surface of the metal, resulting in the formation of numerous small corrosion cells. This means that electric currents flow through the soil from certain areas (anodes) to areas of less negative potential (cathodes), with accompanying loss of metal from the anodes and evolution of hydrogen at the cathodes, When cathodic protection is applied, direct current from an external source is caused to flow through the soil from an auxiliary anode toward the corroding surface. This applied current causes the cathode potentials to approach the anode potentials, and thus reduces the corrosion currents.

## School buildings erected in a few days

Research work at the University of Michigan has produced a low-cost school building which combines durability with extreme flexibility, researchers claim. They say the new-type structure, known as the "Unistrut School," can be expanded or reduced in size with comparative ease. Like an erector set, it can even be unbolted and moved to a new location if desired.

C. Theodore Larson, professor of architecture at the university, supervised the research work which was sponsored by the Unistrut Corp. of Wayne, Mich.

The school is assembled on the site. Standardized steel framing members are bolted together with the manufacturer's standard connector pieces. These framing members are factory-fabricated to the desired length from cold-rolled strip steel.

Other items used are asbestos-cement panels and sheets of plastic and glass which arrive on the site pre-cut to the exact size, ready for installation. Glass fiber is used for insulation of walls.

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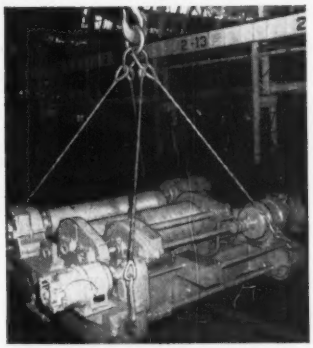

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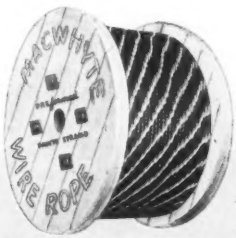


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# FIELD AND OFFICE

NEW USE FOR THE LOWLY TIRE PUMP—The U. S. Bureau of Reclamation has worked out a unique method of testing the joints of 42-inch reinforced concrete pipe with the use of water and air pressure from an ordinary tire pump. The pipe shown in the picture is part of the water distribution system that is now being built to bring Central Valley Project water to the fertile but dry lands of the San Joaquin Valley. The workman is using a tire pump to place water and air pressure on a completed joint. The ring is seen in position, with a rubber gasket on each side of the joint. Space between the gaskets is filled with water and subjected to air pressure equivalent to the hydraulic pressure for which the line is designed. If the joint is not tight water will be forced through to the outside of the pipe and repairs can be undertaken while access is easy, and before additional pipe is laid.

## Easy way to find moments

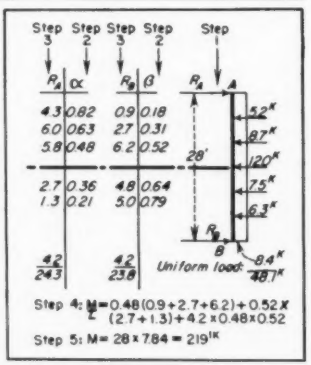
For beams carrying concentrated loads, here is a time-saving method for computing reactions and bending moments:

1. Sketch the beam vertically and indicate the loads horizontally, in kips, not necessarily to scale. Call one end of the beam A and the other B.

2. Determine the distances of each load from both ends of the span. Express these values as fractions of the beam length and enter on the diagram in line with the corresponding loads. Call the distances from the B end $\alpha$-factors and from the A end $\beta$-factors.

3. Multiply each load by its $\alpha$ and $\beta$. Enter the product of the loads by the $\alpha$-factors in a column marked $R_A$, reaction at A, and similarly, the product of the loads by the $\beta$-factors in a column marked $R_B$. The sum of the products in each column is the corresponding beam reaction. Check against total load.

4. Draw a horizontal line at the point where the moment is to be found. Note the $\alpha$ and $\beta$-factors for this point. Add up the values in the $R_B$ column between the line and A and multiply by the $\alpha$-factor at the line. Similarly, add up the values in the $R_A$ column between the line and B and multiply by the $\beta$-factor.




5. To obtain the bending moment at the point, add these products and multiply the resulting sum by the span length.

When the beam carries a uniform load also, add half this load to each reaction to obtain the total reaction. To obtain the bending moment at any point, add to the moment for the concentrated loads the product of half the total uniform load and both $\alpha$ and $\beta$-factors for the point.—Frederick P. Wiesinger, designer, Sumner S. Sollitt Construction Co., Chicago, Ill.

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## MEANS SMOOTHER, FASTER SWING

IF YOUR work calls for heavy going — in mine and quarry — here's the machine *designed* for it — the P&H 1055 (3½ yds.).

Here's tough, all-welded construction to take abuse in stride . . . extra stability so you can use all the power you need . . . speed and smooth operation in every function to give you maximum output.

MAGNETORQUE ELECTRIC SWING gives you faster swing, more accurate control with less strain on machine and operator. No more swing frictions with their adjustments and replacement costs.

See this real ROCK RATED shovel in action and judge for yourself.

*T. M. of Harnischfeger Corporation for electro-magnetic type clutch.

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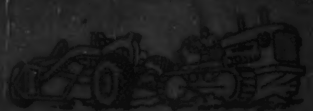

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**COMPLETE SHOP FACILITIES** for major work—you're never far from an International Distributor's shop, no matter where your equipment goes.

**QUICK PARTS SUPPLY** from your distributor's fully stocked parts department, backed by International Harvester's network of strategically located parts depots (in size and scope, exclusive in the industry).

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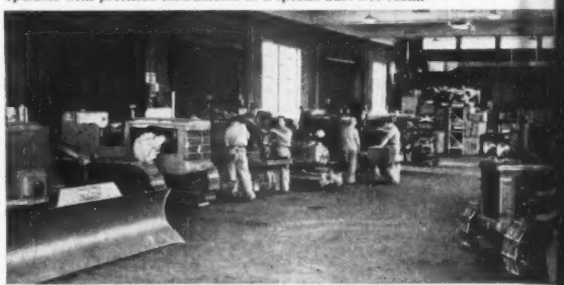
**"HEART SPECIALIST!"** A crawler's heart is its sturdy fuel pump. It seldom needs attention. When it does, this "diesel doctor" operates with precision instruments in a special dust-free room.



**HERE'S HELP WHEN YOU NEED IT.** Skilled, experienced mechanics equipped with the right tools for doing major maintenance fast at your International Distributor's shop.

**ON THE JOB!** Here are an International Distributor's field servicemen, on the job at the job site installing an overhauled transmission. A phone call gets this kind of service.

# MEETINGS

## Conservation by reuse of water urged by Wolman

Speaking at the recent meeting of the American Association for the Advancement of Science in Philadelphia, Abel Wolman, sanitary engineering professor at Johns Hopkins University, pointed up the importance of reusing water to conserve present resources.

He put present national water consumption at 100 billion gpd, and claimed even twice that consumption, estimated for 1961, won't overtax present water sources—existing and potential. Still, he proposed a conservation program, including a fast inventory, skill in water reuse, and more regional cooperation.

Gilbert F. White, president of Haverford College, described Baltimore's plan, begun in 1943, to sell its entire waste water flow to Bethlehem Steel Co. for reuse industrially at its Sparrows Point plant. Some 60 mgd are now reused, with 150 mgd the ultimate.

The Fontana, Calif., steel plant of Henry J. Kaiser, where some water is reused as many as 40 times was cited as an ideal in skillful reuse. (ENR July 19, 1951, p 40)

## New power group formed

The Midwest Power Conference has been renamed the American Power Conference. R. A. Budenholzer, conference director and professor of mechanical engineering at Illinois Institute of Technology, said the name was changed more accurately to describe the scope and character of the conference. The 13 annual Midwest power meetings have attained wide geographical and scientific significance.

The first annual American Power Conference will be held March 26, 27, and 28 at the Sherman Hotel, Chicago, Ill.

Illinois Tech will continue to sponsor the meeting and a group of Midwest schools and societies will participate.

## Parking lot operators form national group

A group of parking lot operators has been organized as the National Parking Association and is seeking to solve municipal parking problems with private rather than with public funds.

At a recent meeting attended by the operators of about 2,000 parking facilities in 60 cities, a budget of $40,000 was underwritten for the first year's operations. B. M. Stanton of Norfolk, Va., was elected president of the association because of a successful fight he led against a move by that city to go into the parking lot business. Mr. Stanton says that the objectives of the association are to cooperate with city officials to obtain data to determine the need for additional facilities, and by working with officials, merchants and property owners to propose plans best suited to local conditions.

## Clean streams program

More than $150,000,000 is being spent for sewage and industrial waste treatment works throughout Pennsylvania since the state's clean streams program was started in 1944, Dr. Russell E. Teague, secretary of the Pennsylvania State Health Department, told a symposium on stream pollution and industrial wastes at the same meeting.

Otto E. Passman, Monroe, La., has been named president of the Mississippi Valley Flood Control Association. Other officers are: Sen. John L. McClellan, first vice-president, and Clifford Davis, second vice-president.

A. J. McKenzie, of San Antonio, has been elected president of Texas, Oklahoma and Louisiana chapters of the Municipal Contractors Association, Associated General Contractors; L. H. Durst, vice-president, R. D. Whittle, secretary-treasurer.

The 1952 officers of the Structural Engineers Association of Northern California are president, John J. Gould, San Francisco; vice-president, G. A. Sedgwick; and directors, R. D. Dalton and J. A. Paquette.

Frank W. Edwards was elected president of the Chicago Chapter, Illinois Society of Professional Engineers. Other officers: John Dolio, vice-president, and K. C. Hoeglund, secretary-treasurer.

Ohio Contractors Association has elected Ralph O. Perrott, Jr., president; Paul F. Hollinder, vice-president; and Charles E. McKee, secretary-treasurer.

J. O. Ackerman, chief of the Omaha District of Army Engineers, is the new president of the Nebraska section of the American Society of Civil Engineers. Other officers are: D. G. Lewis, first vice-president; G. R. Bathe, second vice-president.

C. R. McMillan, chief highway engineer of South Carolina, was elected president of the Southeastern Association of State Highway Officials; R. B. Richardson of Louisiana, vice-president and J. K. Crowson of South Carolina, secretary-treasurer.

Leo P. Morgan is president of the Dallas Chapter, Associated General Contractors. Other officers Charles A. Vilbig vice-president; J. O. Boyd secretary-treasurer, and William L. Hickey and J. Lawrence Jones, directors.

E. J. Burke, Jr., was elected president of the Texas Association of Home Builders, Inc. Other officers are Preston Plumb, Houston, first vice-president; Coy Dobbins, Austin, treasurer, and William J. Elliott, El Paso, secretary.

The North Carolina State Turnpike Authority, has elected Orton Boren of Greensboro chairman. Edwin L. Jones, Charlotte contractor, is vice-chairman.

## CALENDAR

**N. Y. Section, American Water Works Assn.**, winter luncheon meeting, Hotel Park Sheraton, N. Y., Jan. 15.

**Highway Research Board**, annual meeting, National Academy of Science Bldg., Washington, D. C., Jan. 15-18.

**N. Y. Sewage and Industrial Wastes Assn.**, annual meeting, Hotel Statler, N. Y. City, Jan. 17-18.

**National Association of Home Builders**, Stevens and Congress Hotels, Chicago, Jan. 17-24.

**Canadian Construction Association**, annual meeting, Royal York Hotel, Toronto, Ont., Jan. 20-23.

**National Association of Home Builders**, annual convention and exposition, Conrad Hilton and Congress Hotel, Chicago, Jan. 20-24.

**American Road Builders Association**, Golden Anniversary, Rice Hotel, Houston, Tex., Jan. 21-24.

**Wisconsin Highway Commissioners and Highway Committee Members Association**, winter conference, Schroeder Hotel, Milwaukee, Jan. 22-24.

**Associated Equipment Distributors**, Conrad Hilton Hotel, Chicago, Jan. 27-31.

**American Society for Metals**, William Penn Hotel, Pittsburgh, Pa., Jan. 31-Feb. 1.

**California Conference on Street and Highway Problems**, University of California, Los Angeles, Feb. 6-8.

**National Council of Private Motor Truck Owners**, convention, Hotel Statler, Washington, D. C., Feb. 7-8.

**National Sand and Gravel Association, and National Ready Mixed Concrete Association**, convention and exposition, Conrad Hilton Hotel, Chicago, Ill., week of Feb. 11.

**Illinois annual Conference on Highway Engineering**, Urbana, Feb. 19-21.

**N. Y. State County Highway Superintendents Association**, DeWitt Clinton Hotel, Albany, Feb. 20-22.

**Associated General Contractors of America**, Statler Hotel, Detroit, Feb. 25-28.

**Materials Handling Conference**, Purdue University, LaFayette, Ind., Feb. 25-26.

**American Concrete Pipe Association**, annual convention, Drake Hotel, Chicago, Ill., Feb. 28-March 1.

# POWER BUGGIES SPEED WORK ON WORLD'S LARGEST UNDERGROUND GARAGE

## WHITEMAN BUGGIES PLACING 50,000 CU. YD. OF CONCRETE FASTER—AT FAR LESS COST!

Trees and grass will soon grow again in Los Angeles' Pershing Square... but underneath will be parking space for 2000 cars at one time. Concrete for this 630,000 square foot garage is speeded to all parts of the job by Whiteman Power Buggies... over narrow runways, up 25% grades... then placed quickly with Whiteman's positive control "in-gear" dumping mechanism. One Power Buggy does the work of 6 men with wheelbarrows and does it faster. Carries 12 cu. ft., yet is light weight. 7.5 hp aircooled engine. Speeds up to 16 mph. Rugged, dependable. Priced to pay for itself in a short time. Send coupon for details *now!*

### WHAT THE CONTRACTORS SAY:

C. A. McMahon, superintendent of construction for Ford J. Twaits Co., Morrison-Knudsen Co., Inc. and T-S Construction Engineers, Inc. on City Park Garage, says: "Our Whiteman Power Buggies are doing a tremendous job. It amazes me how they speed along the runways, turn on a dime and squeeze through tight spots all day long, yet never get tired. They're cutting costs and speeding up the job in a big way."

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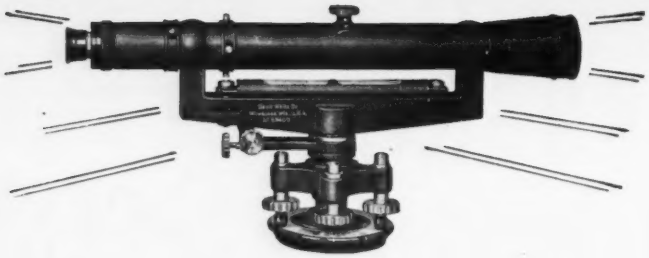

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| Distance away you can read 1/100 ft. graduation | 1200 ft. | 1050 ft. | 900 ft. |
| Diameter of objective lens | 1.81 in. | 1.485 in. | 1.69 in. |
| Field of view (In minutes of arc) | 64' | 52' | 60' |
| Coated optics | YES | YES | YES |
| Covered Leveling Screws | YES | YES | YES |
| Can you easily replace worn leveling screws in the field? | YES | NO | YES |
| Sensitivity of level vial (in seconds of arc per 2mm of graduation) | 20" | 20" | 25" |
| Price — Complete with carrying case, tripod and accessories — F.O.B. factory | $280.00* | higher | higher |

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## OBITUARY

### C. M. Ainsworth dies, Boundary Comm. engineer

**Culver M. Ainsworth,** 62, chief engineer for the U. S. section of the International Boundary Commission since 1927, died at El Paso, Tex., Dec. 23, after returning from a trip to Mexico.

Mr. Ainsworth took a prominent part in the conclusion of the Water Treaty of 1944 between the United States and Mexico. Since the signing of the treaty, he was one of the principal persons instrumental in its implementation.

### Chicago engineer

**Loran D. Gayton,** 67, assistant city engineer in charge of construction, Chicago, for the last 10 years and city engineer from 1927 to 1941 died Dec. 28. A civil engineering graduate of the University of Illinois, Mr. Gayton served Chicago's Dept. of public works for 38 years. Among his many engineering accomplishments were Chicago's Western Avenue and Thomas Jefferson pumping stations, and the design and construction of the substructure for the city's South District filtration plant. His contributions to engineering literature were many.

### W. M. Hall, concrete pioneer

**William McLaurine Hall,** 91, who is said to have been the discoverer of basic formulas and practices in concrete construction, died at Parkersburg, W. Va., recently. He was a retired U. S. Army engineer and builder of 16 Ohio River dams. He attended West Point and entered civil engineering in 1881. He retired from the Army Engineers in 1932 after 39 years service. He was credited with the introduction of core-drilling to determine where masonry would be placed on bedrock; for the introduction of means of anchoring concrete masonry to bedrock; for the design of a then new-type beartrap-weir for the control of pool stages above dams—later adopted as standard.

**Frederick A. Knight,** 88, road construction engineer, died in Chicago recently. Upon his graduation from the Sheffield Scientific School at Yale University, he went to the park department at Cleveland, Ohio as an engineer. Later he served the South

(*Continued on page 69*)

# TELSMITH ENGINEERED

## NEW Tyrone Rock Products Co. plant PRODUCES 3000 TONS A DAY at low cost...with TELSMITH Conveying and Screening Equipment

● To serve the rapidly growing Atlanta market, this modern plant at Tyrone, Ga., is a remarkably efficient, low-cost operation. Designed and engineered by Telsmith, its average capacity is about 300 tons per hour with peaks of 450 tons. Highly efficient screening is supplied by 13 Telsmith vibrating screens making 8 sizes of crushed granite (−2″ to −8 mesh) for railroad ballast, and concrete and asphalt construction.

Finished sizes are stockpiled over a reclaiming tunnel, then rinsed and delivered to bins for loading cars and trucks. Telsmith did all engineering, including detailed drawings, furnished all screens and conveyors and carefully co-ordinated all equipment for smooth, efficient operation. To relieve yourself of technical details and to be sure of satisfactory results, consult Telsmith without obligation. Send for Bulletin 266.

### TELSMITH
### Equipment in this Plant

One (1) 5′ x 12′ Pulsator Single Deck Scalping Screen

One (1) 5′ x 12′ Pulsator Double Deck Scalping Screen

One (1) 4′ x 10′ Pulsator Double Deck Rinsing Screen

Eight (8) 5′ x 12′ Vibro-King Single Deck Finishing Screens

Two (2) 4′ x 10′ Vibro-King Single Deck Finishing Screens

Twelve (12) Telsmith-BG Conveyors 18″ to 42″ wide, 42′ to 200′ long

Fifteen (15) 16″ x 18″ Bin Gates Boquad Tunnel Type

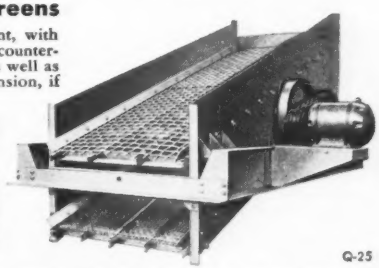
## TYRONE USES Thirteen (13) TELSMITH SCREENS

### Ten (10) VIBRO-KING 2-Bearing Screens

For Finished Screening. Simpler, more efficient, with lower upkeep. Telsmith-patented automatic counter-weights assure smooth starting and stopping as well as exceptionally smooth operation. Cable suspension, if desired. Five sizes: 1, 2, or 3 decks.

### Three (3) PULSATOR 4-Bearing Screens

Recommended for heavy-duty scalping or screening large sized aggregates; uniform and efficient on all decks, under heaviest loads. Eleven sizes: 1, 2, or 3 decks.



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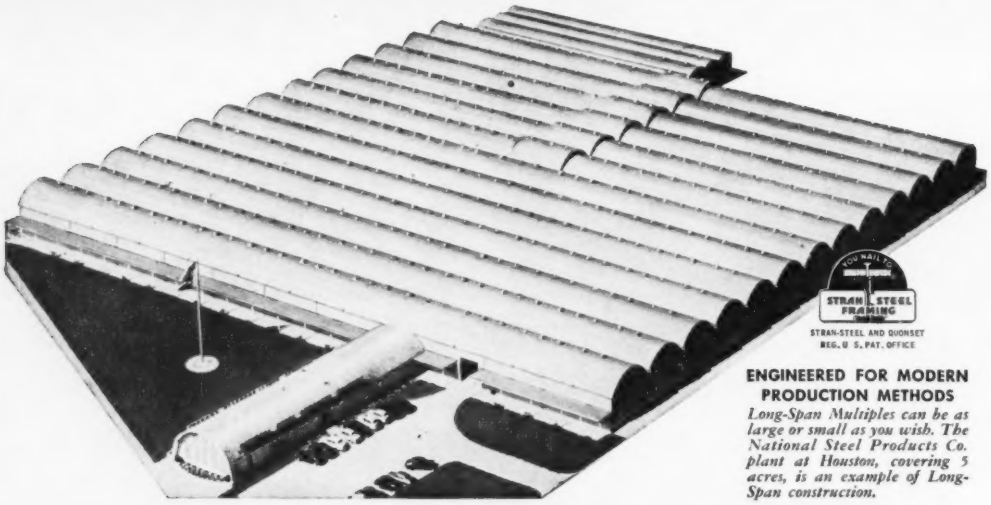
# FOR MODERN PRODUCTION

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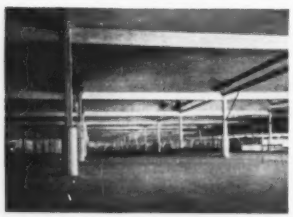
*Long-Span Multiples can be as large or small as you wish. The National Steel Products Co. plant at Houston, covering 5 acres, is an example of Long-Span construction.*

## THE ALL-STEEL BUILDING INDUSTRY DEMANDS—

# STRAIGHT SIDEWALL LONG-SPAN MULTIPLE

## 15′ OR 18′ CLEAR HEIGHT—40′ x 35′ BAYS

**A NEW MEMBER OF THE QUONSET LINE**
**HIGHER—WIDER—PROVIDES ALL THE ROOM YOU NEED**



*BIG 40′ x 35′ 6″ BAYS give more clear-span area for space-consuming manufacturing or warehousing operations. 15′ or 18′ clear height under trusses permits heavy machinery or entrance of boxcars.*

*ANY ARRANGEMENT of windows or doors in end-walls or sidewalls is possible. Basic Long-Span Multiple is 70′ x 80′, can be lengthened or widened as desired.*

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You get more room in the Long-Span Multiple. Its column spacing permits more unobstructed floor space --enough space for production and assembly lines, cranes, boilers, monorails, and complete palletization. The Long-Span Multiple is engineered to carry a modern monorail system.

Higher, wider, roomier . . . Long-Span Multiples are easily insulated. They are flexible enough to fit any size lot or use requirement. Ribbed and trussed with N-A-X HIGH-TENSILE steel for long life and economy, they go up in weeks instead of months.

The building that can answer your individual expansion problem is available now. Write, wire or phone for complete information.

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PRODUCED OF NAX HIGH-TENSILE STEEL

## Obituary . . .

Park Commission in Chicago, and worked in road construction for the U. S. government and Illinois.

**Lansing W. Althof,** 65, north western district engineer for the Union Pacific R.R. died in Portland, Ore., Dec. 11. He had been with the railroad for 40 years.

**Leo F. Lawler,** 38, civil engineer who worked for the federal government at various locations died, Dec. 12 in Rochester, N. Y. He served with the Navy during World War II and since was engaged as a civil engineer with the government.

**Frank D. Caraway,** 58, civil engineer of Seattle, Wash., died there Dec. 14. He attended the University of Iowa and worked as a civil engineer in Alaska for many years.

**C. Howard Edmunds,** 52, for 13 years superintendent of the Cattaraugus County, N. Y., highway department, died Dec. 17. He had been with the department for 28 years and previously was with the New York State Highway Department.

**L. S. Gregory,** 48, consulting engineer, died at Tulsa, Okla., Dec. 16. He was a graduate of M.I.T.

**James S. Beckwith,** 72, founder and first president of the Associated Equipment Distributors, died at Pittsburgh, Pa., Dec. 17.

**Fred Mollenkopf,** 76, Mercer County, Ohio, engineer at Celina, died Dec. 18. He served for the last five and a half years, having previously been Van Wert County engineer for 12 years, and deputy engineer for eight years. During World War II he served as a major with the Engineer Corps in France.

**Karl A. Brahe,** former civil engineer of Utica, N. Y., died Dec. 15 in Yonkers. He was graduated from Rensselaer Polytechnic Institute and his first major assignment as an engineer was construction of a dam at Oriskany, N. Y. Later he was with E. I. du Pont de Nemours & Co. Inc. and General Motors Corp.

**George F. Haskell,** 78, assistant engineer in the Boston, Mass., Department of Public Works, died Dec. 19 in Dorchester. In the late 90's he was employed by the city as a surveyor and was later transferred to the sanitary department. He had a prominent part in planning the city's sewer expansion program.


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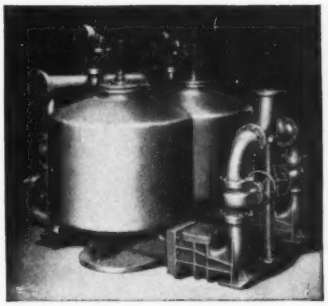

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Osceola, Iowa
Mt. Clemens, Mich..
Freeport, L. I., New York (6)
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Moorehead, Minn., Treatment Plant (6)
Anacostia Treatment Plant, Washington, D. C.

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Warsaw, Ind.
Cedar Rapids, Ia.
Davenport, Ia.
Sioux City, Ia.
Hays, Kans.
Salina, Kans.
Winnsboro, La.
Aberdeen, Md.
Baltimore, Md.
Brighton, Mich.
Detroit, Mich.
Flint, Mich.
Pontiac, Mich.
Royal Oak, Mich.
Tawas City Mich.
Faribault, Minn.
Winona, Minn.
Brookhaven, Miss.
Butler, Mo.
Rolla, Mo.
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- √ **no wet well**
- √ **no noxious fumes or odors**
- √ **no danger of explosion**
- √ **no screens or shredders -- no repulsive cleaning job**

For 75 years, in hundreds of municipal installations around the world, Shone Pneumatic Ejectors have been a symbol of utter dependability.

You may have heard the amazing story of the Shone Ejector sealed in its pit for more than 20 years—never inspected because it was not listed among mechanical equipment; rediscovered when alteration work opened the pit—operating as rhythmically and quietly as the day it was installed.

**MINIMUM MAINTENANCE**

Shone Ejectors require **no attention.** They can be operated from distant compressors — and several can be operated from a single compressor plant.

●

Write for Bulletin 4000-C—contains Air Volume and Pressure Table, sizes, dimensions, air piping layouts and other comprehensive specifications.

Use the coupon—for convenience.

YEOMANS

**PUMPS FOR BUILDINGS, MUNICIPALITIES, INDUSTRIAL APPLICATIONS— and a complete line of Sewage and Waste Treatment Equipment**

**Yeomans Brothers Company**
**1445 North Dayton Street**
**Chicago 22, Illinois**

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**Please send your Bulletin 4000-C.**

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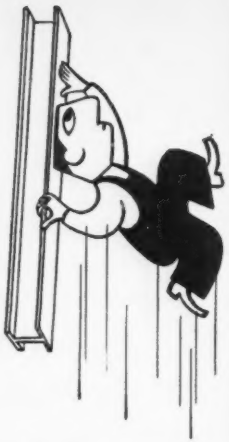
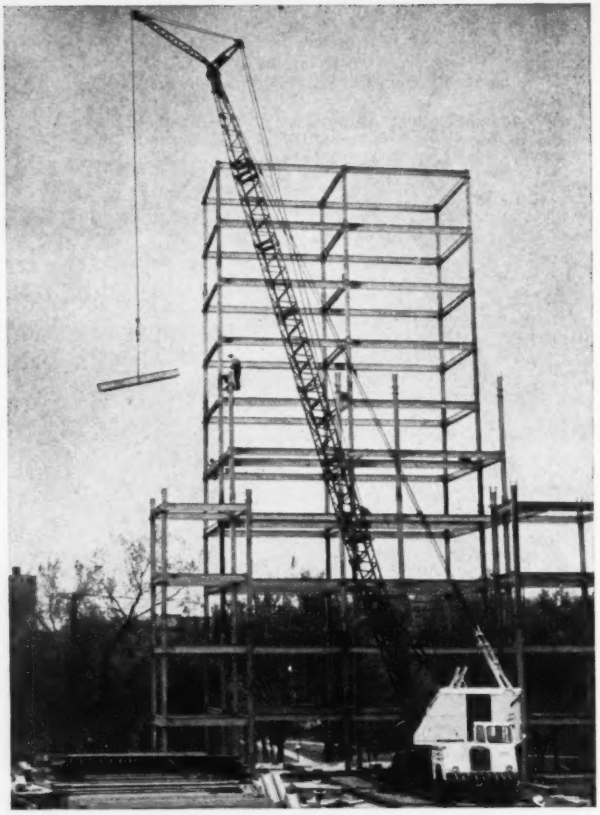


# All lifts are easier with a BAY CITY CRANEMOBILE



**CHECK THESE FEATURES**

- √ 20-25 Ton Capacity
- √ Pin-Connected Boom
- √ Hi-Collapsible Gantry
- √ Independent Power Boom Hoist
- √ Precision Power Load Lowering
- √ Removable Counterweight
- √ Specially Designed Carrier
- √ High Road Speeds

Many contractors run into jobs they can't handle unless they buy new equipment. But those owning a BAY CITY CraneMobile have bought versatile, flexible performance to handle long booms for high reach or short booms for heavy lifts.

The BAY CITY CraneMobile is made in several sizes having crane ratings to 25 tons—will go right to the job at speeds up to 35 m.p.h. and is packed with mechanical refinements and operating advantages. Consider the boom hoist—independently operated—with power-up and power-down for precision erection. Then there is the power load-lowering device for handling heavy loads easily and of course the Hi-collapsible gantry which gives an overall height of 11'9" or less when travelling. Why not get complete information from your nearest BAY CITY dealer or write today for catalog.

BAY CITY SHOVELS, INC., BAY CITY, MICHIGAN

# BAY CITY

**SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS**

# MATERIALS AND LABOR PRICES

**Market quotations on construction materials and wage rates reported monthly by ENR correspondents**
**February Materials, and Labor Prices will appear in February 7, 1952 issue**

## CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

| | PORTLAND CEMENT* Per bbl. C/L lots cash, dis. not deducted | | | SAND AND GRAVEL Per ton, carload lots | | | CRUSHED STONE Per ton, carload lots | | CRUSHED SLAG Per ton, carload lots, f.o.b. plant | | CONCRETE BLOCK 8 x 8 x 16-in.; truckload del.; per block | | CONCRETE Ready Mixed 1:2:4, over. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Paper | Bulk | Mortar | Gravel, 1½ in. | Gravel, ¾ in. | Sand | 1½ in. | ¾ in. | 1½ in. | ¾ in. | Sand gray | Lt. wgt. aggr. | 50 c.y., del |
| Atlanta | $3.76 | $3.45 | 3.25 | $2.00 | $2.00 | $1.75 | $2.10 | $2.10 | $1.65 | $1.85 | $0.191 | $0.191 | $11.50 |
| Baltimore | 3.71 | 3.40 | 3.35 | 2.50‡a | 2.50‡a | 2.00‡a | 2.70‡a | 2.80‡a | 2.60‡a | 2.55‡a | .17 | .17a | 10.80 |
| Birmingham | 3.11 | 2.68 | 2.82g | 2.24n | 2.24n | 1.94n | 2.50 | 2.50 | 1.10 | 1.30 | .165 | .165 | 7.85 |
| Boston | 4.01 | 3.69 | 3.58 | 2.50a | 2.50a | 2.50a | 1.50a | 1.60a | .... | .... | .206 | .22a | 11.50h |
| Chicago | 3.29 | 2.99 | 3.94 | 3.00‡b | 3.00‡b | 3.40‡b | 3.00‡b | 3.00‡b | 2.00‡ | 2.00‡ | .22 | .22b | 11.50 |
| Cincinnati | 3.58 | 3.23 | 3.32 | 2.00‡c | 2.00‡c | 2.05‡c | 2.35‡A | 2.35‡A | .... | .... | .21 | .225a | 10.95f |
| Cleveland | N. A. in C. L. | | .... | 2.05ef | 1.85f | 1.65 | 3.81a | 3.81a | 2.85‡ | 2.85‡ | .... | .23 | 13.00g |
| Dallas | 2.95 | 2.65 | 2.70 | 2.18 | 2.28 | 1.84 | 2.22 | 2.38 | .... | .... | .125e | .215 | 9.30 |
| Denver | 3.89 | 3.64 | 3.89 | 1.85 | 2.00 | 1.20 | .... | .... | .... | .... | .22 | .255a | 10.10 |
| Detroit | 3.25f | 2.98 | 3.04 | 4.25‡b | 4.25‡b | 3.75‡b | 4.25‡ | 4.25‡ | 4.25‡ | 4.25‡ | .19 | .20a | 10.30f |
| Kansas City | 3.30 | 3.03 | 3.15 | 1.85‡ | 1.85‡ | 1.50a | 2.00‡a | 2.00‡a | .... | .... | .23ag | .23/.24e | 10.95b |
| Los Angeles | 4.00a | 3.52a | 4.72 | 1.95a | 2.20a | 1.95a | 2.08a | 2.08a | .... | .... | .11fm | .22m | 10.00hm |
| Minneapolis | 3.73d | 3.42d | 3.36 | 2.30‡ag | 2.30‡ag | 1.35‡ag | 2.50‡ag | 2.50‡ag | .... | .... | .23ik | .... | 11.75fk |
| Montreal | 2.66ae | 2.51ae | .... | 2.50 | 2.50 | 1.90 | 1.55q | 1.85q | .... | .... | .20 | .20a | 9.95ah |
| New Orleans | 3.20e | 2.90e | 3.18 | 2.32 | 2.32 | 1.82 | .... | .... | 1.05 | 1.25 | .25 | .... | 12.90 |
| New York | 3.81 | 3.50 | 3.40 | 2.35bk | 2.35bk | 1.60bk | 2.50bl | 2.50bl | .... | .... | .... | .... | 11.30an |
| Philadelphia | 3.38/3.68‡ | 3.07/3.37‡ | 3.38‡ | 2.65‡ | 2.75‡ | 2.15‡ | 2.10‡ | 2.15‡ | 1.75 | 1.65 | .22/.25 | .... | 11.50 |
| Pittsburgh | 3.32 | 3.04 | 3.32 | 2.15‡ | 2.15‡ | 2.10‡ | 2.60‡ | 2.60‡ | 2.15 | 2.15 | .23d | .23d | 11.00 |
| St. Louis | 3.22/3.43b | 2.84/3.10b | 3.07/3.22 | 2.90am | 2.90am | 2.30/2.70am | 1.70j | 1.70j | 1.25 | 1.25 | .215 | .27ei | 10.40 |
| San Francisco | 3.35 | 2.95 | .... | 1.88 | 1.88 | 1.98 | 1.98 | .... | .... | .... | .... | .22ci | 10.30e |
| Seattle | 3.80a | 3.25a | 4.50A | 3.00‡bm | 3.00‡bm | 3.00‡bm | 3.50‡bm | 3.50‡bm | .... | .... | .24j | .3325j | 10.95j |

‡Delivered. * Prices incl. dealers comm. except as noted.
CEMENT: a Subj. to 10¢ dis. b Less 2% for cash. c CL price dealers' comm. not incl. d Dealers sell only LCL. e Plus switching charges. f Paying up to $3.80 for cement brought in from outside sources. g Warehouse pickup. h LCL.
SAND, GRAVEL, STONE & SLAG: a Truck lots. b Per cu. yd. c 5 tons or more. e ¼". f Pea gravel. g Less 5% for cash. h Less than 5 tons. i Sales tax incl. j F.o.b. quarry. k Barge lots sold. l F.o.b. scow Hudson river. m Less 2% for cash. n F.o.b. cars.
CONCRETE BLOCK: a Cinder. b Waylite. c Haydite. d Celocrete. e 5½ x 8 x 12 in. f 8 x 4 x 16. g F.o.b. truck at job. i Less 2% for cash. j Less 1% for cash. k 8x8x18. l F.o.b. plant San Rafael. m F.o.b. yard.
READY MIXED CONCRETE: a 5 cu. yds. or over del. Man. b 25 cu. yds. or more. c 10–100 cu. brackets. e 2,000 lb. conc. f 2500 lb. comp. g Aver. haul 7–9 mi. zone. h Less 50¢ for cash. i 5% off for cash. j 2% off for cash. k Sales tax included. l 1:2½:4. m F.o.b. yard. n Plus escalator clause.

CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month; on carload deliveries, no trucking, same as dealer cash discount 10c. per bbl. for payment within 15 days of date of invoice. Subject discount 10c. per bbl. 20 days in Montreal.

### CURRENT MAXIMUM PRICES AT CEMENT MILLS

Charge for bags not included. For paper bags add 30¢ per bbl., not refundable

| | Bulk | | Bulk | | Bulk | | Bulk |
|---|---|---|---|---|---|---|---|
| Richard City, Tenn. | $2.60† | Buffington, Ind. | $2.55† | Steelton, Minn. | $2.65† | Muskegon, Mich. | $2.70† | Toledo, O. | $2.60† |
| Clinchfield, Ga. | 2.60† | Independence, Kan. | 2.50† | Leeds, Ala. | 2.45† | Saginaw, Mich. | 2.60† | Milwaukee, Wis. | 2.75† |
| Kingsport, Tenn. | 2.60† | Hannibal, Mo. | 2.55† | Duluth, Minn. | 2.65† | Wyandotte, Mich. | 2.60† | Green Bay, Wis. | 2.75† |
| West Des Moines, Iowa | 2.65† | Northampton, Pa. | 2.60† | Hudson, N. Y. | 2.60† | Buffalo, N. Y. | 2.60† | Ironton, O. | 2.60† |
| Nazareth, Pa. | 2.60† | Universal, Pa. | 2.65† | Alpena, Mich. | 2.50† | Oswego, N. Y. | 2.75† | Montreal City | 2.31 |
| Bath, Pa. | 2.60† | Waco, Tex. (+ 10¢ tax) | 2.50† | Detroit, Mich. | 2.60† | Cleveland, O. | 2.60† | W. Winfield, Pa. | 2.65† |

†*Prices to hold for first quarter of* 1952.

## PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

| | PAVING BRICK AND BLOCK | | | PAVING ASPHALT Per ton, less than 80 penetration | | ASPHALT BINDERS—FLUXES Per gal., 80–300 penetration | | CUTBACK ASPHALT Per ton | | ROAD OIL Per gal. | ASPHALT EMULSION (Quick-breaking) Per gal. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Granite Per M lots of 50,000 4x4x8 in. | Brick per M 3x4x8½ in. carload lots | Wood per sq. yd. 3½ in. 16-lb. treat | Tank car | Drums | Tank car | Drums | Tank car | Drums | Tank car | Tank car | Drums |
| Atlanta | $73.00 | $35.00 | $2.25 | $26.00 | $32.25 | $0.1975 | $0.339 | $0.095w | $0.185w | $0.105 | $0.115 | $0.225 |
| Baltimore | 150.00‡ | 57.70‡ | ..... | 22.00 | ..... | .0809 | 0.15 | .09w | .17w | .09a | .09 | 0.12 |
| Birmingham | ..... | 45.50i | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Boston | ..... | ..... | ..... | 24.50a | 35.50a | 22.00ax | 35.50ax | .105aw | .22aw | .09a | .105a | .22a |
| Chicago | 155.00‡ | 90.00‡b | 4.40/4.60‡f | 20.25b | 30.25b | 19.25bv | 29.25bv | .0875bw | .16bw | .075b | ..... | ..... |
| Cincinnati | ..... | ..... | ..... | 22.50B | ..... | 22.50Bc | ..... | .10w | ..... | ..... | ..... | ..... |
| Cleveland | 200.00 | 55.00d | 4.12g | 23.00A | ..... | 23.00A | ..... | .1025Aw | .194w | ..... | .11A | .19A |
| Dallas | e | 40.00 | e | 24.05 | 43.09 | .1016 | .2103 | 27.09 | 47.87 | .0980 | .1041 | .2128 |
| Denver | ..... | 48.00 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Detroit | ..... | 92.00 | .. .. | 26.45 | .... | 26.45v | ..... | .117w | ..... | .0925 | ..... | .2166r |
| Kansas City | e | e | e | 18.55el | ... | ..... | ..... | .0725w | ..... | .0635e | ..... | ..... |
| Los Angeles | e | ..... | e | 15.50dwz | .... | 15.50dzx | .... | 17.00dx | ..... | 16.00dx | .0825f | .1525f |
| Minneapolis | ..... | ..... | 2.83h | 23.90 | .... | 22.90 | ..... | .0994w | ..... | .0894 | .1035 | ..... |
| Montreal | 137.00 | e | e | 27.00n | 36.65n | .135n | .183n | 16.30nw | 18.80nw | .132n | .187ns | .225ns |
| New Orleans | ..... | ..... | ..... | 17.50e | ....e | 17.50ev | .....e | .085ew | .....e | .0882 | .085 | ..... |
| New York | ..... | ..... | 3.12f | 26.26q | 47.50q | 25.26st | 46.58st | .1071w | .2021w | .1071 | .1072 | .1993 |
| Philadelphia | 175.00 | 110.00 | 4.06 | 22.00 | .... | ..... | ..... | .095w | ..... | ..... | ..... | ..... |
| Pittsburgh | 165.00 | 4?.00 | 4.60 | 23.00 | 37.00 | .10 | .20 | 27.00 | 39.00 | .095 | .09 | .205 |
| St. Louis | ..... | ..... | ..... | 19.25f | ..... | .1698 | ..... | .0865/.089w | ..... | .1h | ..... | ..... |
| San Francisco | ..... | ..... | ..... | 17.00q | 32.50qp | 17.00qkv | 32.50qkv | 19.00q | 36.50q | 17.50v | .085q | ..... |
| Seattle | ..... | ..... | ..... | 17.00A | 37.50A | 16.25kv | ..... | 19.50A | ..... | 18.50kv | .095A | .105Ar |

‡ Delivered.
PAVING BRICK & BLOCK: a CL. b 3½ x 4 x 8½. c 2½ x 8½ x 4. d LCL, truck deliveries. e Not used. f 2" interior 6¢ treat. g 3". h 8¢ treat. i 3 x 3½ x 8½.
ASPHALTS: a Price at plant, Everett, Mass. b F.o.b. refinery, Lockport, Ill. c F.o.b. Sugar Creek, Mo. d F.o.b. refinery, El Segunda. e F.o.b. Baton Rouge. f F.o.b. Wood River or Roxana, Ill. g F.o.b. Richmond, Calif. h F.o.b. Martinez. i Bulk refinery. j F.o.b. refinery, Inglewood, Calif. k 50–110 penetr. l Less than 100 penetr. m 40–80 penetr. n Tax incl. o Drums not avail. p Shipped in steel bbl. q 40–85 penetr. r In customer's drums. s Shipped in drums, per drum. t 85–300 penetr. u Per 100 gal. v Per ton. w Per gal. x Also tank trucks. y F.o.b. Oakland. A F.o.b. refinery Cleveland. B *F.o.b. Latonia, Ky.*

## IRON AND STEEL PRODUCTS—PER 100 LBS. BASE MILL PRICES

| | STRUCT SHAPES— | PLATE CARBON STEEL | REINF BARS billet | RIVETS ½-in. struc- tural | SHEET PILING Base | STEEL RAILS Per Net Ton Standard | Light | Re-rolled | TRACK SUPPLIES Angle Bars | Std Spikes | Tie Plates | Track Bolts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Birmingham Area | $3.65 | $3.70 | $3.70 | $7.85 | .... | $72.00 | $80.00 | Not | $4.70 | $6.15 | $4.50 | .... |
| Chicago Area | 3.65 | 3.70 | 3.70 | 7.85 | $4.45 | 72.00 | 80.00 | avail- | 4.70 | 6.15 | 4.50 | .... |
| Pittsburgh Area | 3.65 | 3.70 | 3.70 | 7.85 | 4.45 | 72.00 | 80.00 | able | 4.70 | 6.15 | 4.50 | $9.85 |
| Buffalo Area | 3.70 | 3.70 | 3.70 | 7.75 | 4.45 | 72.00 | 80.00 | .... | 4.70 | 6.15 | 4.50 | 9.85 |
| Cleveland | .... | .... | 3.70 | 7.85 | .... | ..... | ..... | .... | .... | .... | .... | 9.85 |
| Youngstown Area | .... | .... | 3.70 | .... | .... | ..... | ..... | .... | .... | 6.15 | .... | .... |
| Geneva | 3.65 | 3.70 | .... | .... | .... | ..... | ..... | .... | .... | .... | .... | .... |
| Los Angeles | .... | .... | 4.40 | .... | .... | ..... | ..... | .... | .... | 6.15 | .... | .... |
| Pueblo | 3.65 | 3.70 | 3.70 | .... | .... | 72.00 | 80.00 | .... | 4.70 | 6.15 | 4.50 | 9.85 |

## IRON AND STEEL PRODUCTS—F. O. B. WAREHOUSE, PER 100 LBS., BASE PRICE

| | STRUCTURAL SHAPES Per 100 lb. base price | REINFORCING BARS Per 100 lb., base price *a* 5 tons to carload lot *b* New billet | Rail steel | Add'l switch | $/cwt for Del. | EXPANDED METAL LATH† Per 100 sq. yd., carload lots Std. diamond mesh, 3.4 lb. | Std. ribbed 3.4 lb. | WELDED FABRIC REINFORCING‡ Per 100 sq. ft., carload lots 4x16 in., No. 5 & 10 wires | 4x12 in., No. 8 & 12 wires | 6x6 in., No. 6 & 6 wires |
|---|---|---|---|---|---|---|---|---|---|---|
| Atlanta | $6.80 | $6.65 | $6.65 | $.025 | $.10 | $31.50 | $31.50 | | | |
| Baltimore | 6.54 | 5.49*l* | .... | .... | .10 | 42.00 | 45.00 | | | |
| Birmingham | 5.70 | 5.75 | 5.75 | .05 | .15 | 47.00*p* | 52.00*p* | | | |
| Boston | 6.20*ak* | 6.19*ck* | 6.19*ck* | .... | .15 | 40.50 | 44.50 | | | |
| Chicago | 5.70 | 4.95*ff* | 4.95*ff* | .0625 | .... | 34.50 | 38.50 | | | |
| Cincinnati | 6.24*ak* | 5.84*r* | .... | .... | .15 | 38.50*zee* | 41.00*zee* | | | |
| Cleveland | 5.95 | 4.81*e* | .... | .... | .10 | 37.00‡ | 40.00‡ | | | |
| Dallas | 8.85 | 7.00 | 7.00 | .... | .... | 49.00 | 52.00 | | | |
| Denver | 7.20 | 7.10*c* | .... | .... | .... | 60.00*s* | 72.00*qs* | | | |
| Detroit | 6.09 | 5.74*n* | .... | .... | .20 | 53.00 | 58.00 | | | |
| Kansas City | 6.30*nn* | 5.90*ff* | .... | .... | .... | 39.50 | 41.50 | | | |
| Los Angeles | 6.45*fkk* | 6.15*a* | .... | .... | .15 | 48.00 | 54.00*kk* | | | |
| Minneapolis | 6.15*kk* | 7.12*ll* | 7.12*ll* | .... | .30 | 37.00 | 40.00 | | | |
| Montreal | 6.55*iiB* 6.75*t* | 4.75*i* | 4.75*g* | .... | .... | 44.10*k* | 46.80*k* | | | |
| New Orleans | .... | 5.55*ok* | .... | .05 | .10 | 40.00 | 40.00 | | | |
| New York | 6.50*r* | 6.25 | 6.25 | .... | .30 | 38.50*st* | 45.00*st* | | | |
| Philadelphia | 5.90 | 5.95 | .... | .... | .... | 38.00‡ | 42.00‡ | | | |
| Pittsburgh | 5.40/5.60 | 5.40/5.60 | .... | .... | .10 | 34.00 | 36.00 | | | |
| St. Louis | 6.03*a* | 5.34*c* | 5.34*c* | .... | .... | 47.00*aa* | 53.00*aa* | | | |
| San Francisco | 7.15*ii* | 6.50*l* | .... | .... | .15 | 40.50 | 43.50 | | | |
| Seattle | 4.30*e* | 5.55*el* | .... | .... | .... | 57.00*smm* | 47.00*smmx* | | | |

A.P.M.* Joliet, Illinois, Donora, Penn., $2.66
F.o.b. Mill: Monessen, Penn., $2.76

A.P.M.* Joliet, Illinois, Donora, Penn., $1.87
F.o.b. Mill: Monessen, Penn., $1.93

A.P.M.* Joliet, Illinois, Donora, Penn., $2.79
F.o.b. Mill: Monessen, Penn., $2.89

* At Producing Mill.

‡ Delivered. *b* 1–5 tons, add 35¢. Less than 1 ton, add 50¢. *c* 20 tons or over base. *d* Mill price plus freight. *e* F.o.b. plant. *f* Includes delivery in free delivery zone. *g* 10,000 to 39,999 lbs. *h* List price. Dominion tax exempt. Provincial and Municipal tax extra. *i* Plus Dominion, Provincial and Municipal sales tax. *j* Price per ton. *k* F.o.b. city. *l* Intermediate and hard grade, new billet. *m* Per sq.yd. *n* 5–10 tons. *o* 5 to 20 tons base. *p* Del. of 500 sq. yd. or more. *q* Std. ribbed, 4 lb. per sq. yd. *r* 5 tons or over. *s* LCL. *t* Asphalt coated. *u* Note: Revised size extra — ¼ in., 1½ in., 1¾ in., 10¢. ⅛ in., ¼ in., 25¢. ⅜ in., 50¢. ½ in., 80¢. ⅝ in. $1.90. *v* 20 tons. Straight. *w* Copper bearing. *x* 2.5 lb. per sq. yd. *y* $0.0083 transportation tax included. *z* Copper alloy. *aa* Delivered truck to job. Contractor to do unloading. *dd* F.o.b. dock. *ee* F.o.b. cars. *ff* Carload lots. *gg* Including sales. *hh* 10,000–19,999 lbs. *ii* 400–999 lbs. *kk* 1" ribbed. *ll* 5 to 8 tons, f.o.b. city. *mm* 2% off for cash. *nn* 1–5 tons. *ff* 10 tons to CL. *a* 2000–9999 lbs *A.* Amer. struct'l shapes. *B.* Canadian shapes.

## PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

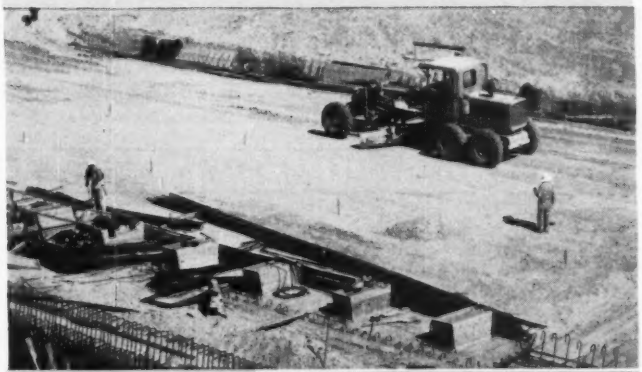
| | C. I. PIPE Per net ton f.o.b. 6 in. to 24 in.*a* | VITRIFIED SEWER PIPE Per foot, Delivered ASTM C13–44T std. 8 in. | std. 12 in. | 24 in. | 36 in. | CLAY DRAIN TILE ASTM C4–24 Per 1,000 ft., carload lots, f.o.b. 6 in. | 8 in. | CONCRETE SEWER PIPE Per ft., delivered: ASTMC 14–41 12 in. | 24 in. |
|---|---|---|---|---|---|---|---|---|---|
| Atlanta | $99.00 | $0.43 | $0.67 | $3.39*gg* | $7.00*gg* | $114.00 | $140.00 | $0.45 | $2.00 |
| Baltimore | 109.00 | .539 | 1.0395 | 4.23*A* | 11.275*A* | 178.20 | 274.80 | .90 | 2.45 |
| Birmingham | 93.00 | .42 | .75 | 2.99 | .... | 210.00‡ | 375.00‡ | 1.25*m* | 2.75*m* |
| Boston | 113.00 | .532*urz* | 1.08*ury* | 4.41*ury* | 11.685*ury* | 187.80*c* | 289.20*c* | 1.55*mg* | 3.80*mg* |
| Chicago | 107.00 | .65 | 1.25 | 5.10 | 13.50 | 150.00‡ | 270.00‡ | .80 | 2.80 |
| Cincinnati | 106.00 | .574*y* | 1.107*y* | 4.32*y* | 11.38*y* | 164.40 | 254.10 | .75*m* | 2.80*m* |
| Cleveland | 108.60 | .462*z* | .89*z* | 3.69*z* | 10.045*z* | 158.00*m* | 245.65*m* | .80*m* | 3.00*m* |
| Dallas | 107.00 | .436 | .822 | 3.234*b* | 9.17*b* | ..... | ..... | .49 | 1.60 |
| Denver | 115.00 | .43*dd* | .74*dd* | 3.18*dd* | .... | ..... | ..... | .74*m* | 2.50*m* |
| Detroit | 108.00 | .70 | 1.35 | 5.35 | 14.40 | 240.00*m* | 360.00*m* | .80 | 3.20 |
| Kansas City | 106.00 | .515 | .92 | 3.64 | .... | 216.70 | ..... | .70 | 3.00*g* |
| Los Angeles | 122.00 | .54*f* | 1.07*f* | 5.24*f* | 13.06*f* | 228.20*f* | 348.90*f* | .85 | 2.40*ff* |
| Minneapolis* | 112.00 | .66*mo* | 1.20*mo* | 4.85*mo* | .... | ..... | ..... | 1.36*h* | 3.87*h* |
| Montreal | 100.00 | .85*z* | 1.50*z* | 5.25*z* | .... | ..... | ..... | 106.50*haa* | 282.70*haa* |
| New Orleans | 101.50 | .498 | .905 | 5.03 | .... | 229.70*bb* | 402.00*bb* | .*cj* | 2.29 |
| New York | 111.00 | .62 | 1.19 | 4.73 | 12.40 | ..... | ..... | 1.15 | 2.50 |
| Philadelphia | 110.00 | .65 | 1.25 | 4.95*A* | 12.65*A* | 300.00‡ | 350.00‡ | 1.55*h* | 3.75*h* |
| Pittsburgh | 109.00 | .406*m* | .772*m* | 2.85*m* | 7.652*m* | 147.50 | 230.00 | 1.05*h* | 2.50*h* |
| St. Louis | 103.00 | .51 | .93 | 3.65 | 8.50 | 170.00 | 400.00 | 1.20*il* | 2.70*hl* |
| San Francisco | 122.00 | .61*d* | 1.20*d* | 5.03*d* | 12.57*d* | 240.00*dll* | 400.00*dll* | .95 | 3.20 |
| Seattle | 124.00 | .51*b* | .91*b* | ..... | ..... | 159.00*c* | ..... | .88*ee* | 2.65*ee* |

‡ Delivered. *a* Class B & heavier. Based on existing freight rates; subject to rate change. Gas pipe and class A, $5 per ton additional. 4 in., $7 per ton additional, 30 in. and larger, usually, $1 per ton less. *b* Extra strength ASTM C 200–44T. *c* 4-in., $90. *d* SS361-A. *e* 30-in. *f* F.o.b. factory. *g* Culvert pipe. Reinforced, ASTM C76–41. *h* Reinforced, ASTM C75–41. *i* Reinforced, ASTM C76–37. *j* Centrispun. *k* Per 100 ft. *l* F.o.b. plant, *m* Truck delivery. *n* Listed price is based on LCL (no minimum). *p* Less than 5 tons, per price per ft. *t* Within switching limits. *u* ASTM C13–49. *v* C.L. f.o.b. origin, freight allowed. *x* 2 ft. lengths. *y* 3 ft. lengths. *z* CESA A 60–1941 specifications used. *aa* No. standard specifications in Can. *bb* Freight allowed to destination in city. *cc* Truck loads; f.o.b. plant, Newton. *dd* LCL, delivered, f.o.b. truck. *ee* 1% off for cash. *ff* 21 . *gg* Extra strength ASTM C–200–50. A Standard strength. * 6" to 8", 1.60 per ft.;

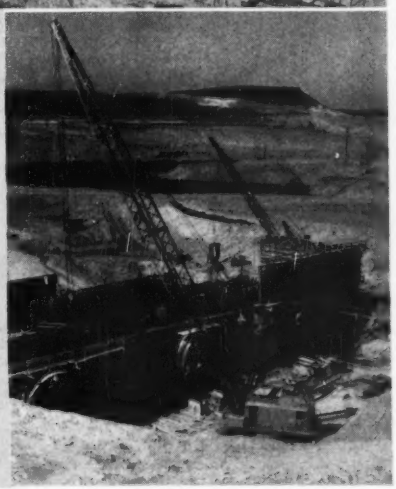
| | *WROUGHT STEEL PIPE— (Full standard weight) | | |

# Pitching 20-hour days for Morrison-Knudsen on Snake River Dam

*Push-loaded by a "Cat" D8 Tractor, this "Cat" DW20 with No. 20 Scraper averages 14 trips per hour on a 1,260-ft. round trip. Average load—17 loose yards. Working day—20 hours.*



*With proper balance between speed, weight and horsepower, this "Cat" No. 12 Motor Grader puts out extra production at low cost.*



*Steady, dependable power for this Manitowoc crane with 140-ft. boom is furnished by its "Cat" D397 Engine.*

The Idaho Power Company's C. J. Strike Hydroelectric project, located on the Snake River near Mountain Home, Idaho, is scheduled for completion this summer. Its earth fill dam will be 3,220 feet long, 115 feet high, 675 feet wide at the base and 30 feet wide at the top. It will contain nearly 2,000,000 cubic yards of material.

Morrison-Knudsen Company, general contractors for the development, are making good use of "Caterpillar" equipment to keep on schedule. Among the "Caterpillar" machines on their roster are a DW20 wheel-type Tractor with No. 20 Scraper, a D8 track-type Tractor with 'Dozer and a No. 12 Motor Grader. Powering a Manitowoc crane with 140-ft. boom is a "Cat" D397 Engine.

Glenn C. Johnson, Morrison-Knudsen Superintendent, keeps a close check on the performance of all his equipment. The high-speed, new "Cat" DW20 is proving itself a big producer. With the D8 push-loading, the DW20 averages 280 trips per 20-hour day on a 1,260-ft. round-trip haul. Average load per trip is 17 pay yards — a total of some 4,760 pay yards per day. Like all "Caterpillar" equipment, sturdily built to stand up under tough going, the DW20 stays on the job with a minimum of down-time.

Many contractors have found that standardization on "Caterpillar" equipment pays off in more ways than schedule-keeping performance. There's also a simplification of their service and maintenance problems that saves time and money. One dealer, the dependable "Caterpillar" Dealer, has the know-how and facilities to take care of the entire "Caterpillar" line of tractors, motor graders, engines and earthmoving equipment. By having him make regular inspections and authorizing him to recondition parts before they become unusable, contractors find they can add many extra working hours to the life of this sturdy equipment.

**CATERPILLAR,** PEORIA, ILLINOIS

**CATERPILLAR**
REG. U. S. PAT. OFF.

DIESEL ENGINES • TRACTORS
MOTOR GRADERS • EARTHMOVING EQUIPMENT

# LUMBER, TIMBER, PLYWOOD—PER M FT., B.M., CARLOAD LOTS F.O.B.

**SHORT LEAF YELLOW PINE AND DOUGLAS FIR**

**All S. L. Y. P. is No. 2 common or better and for No. 1 N. C. Box.** (Prices in Bold Face)

*All Fir boards, dimensions, planks No. 2, Fir small timbers and timbers are No. 1 Lengths up to 20 ft.* (Prices in italics)

| | 1x6 s4s | 1x8 s4s | 2x4 s4s | 2x6 s4s | 2x8 s4s | 2x10 s4s | 3x12 Rgh | 6x12 Rgh | 12x12 Rgh |
|---|---|---|---|---|---|---|---|---|---|
| Atlanta | † **$73.00** | **$76.00** | **$67.00** | **$69.00** | **$73.00** | **$76.00** | **$75.00** | ..... | ..... |
| Baltimore | * **98.50** | **101.00** | **85.00** | **85.00** | **85.00** | **90.00** | **120.00** | ..... | ..... |
| | *104.50g* | *104.50g* | *100.00g* | *100.00g* | *100.00g* | *100.00g* | *114.00* | *$125.25* | *$125.25* |
| Birmingham | † **83.00** | **83.00** | **70.00** | **80.00** | **83.00** | **85.00** | **95.00** | ..... | ..... |
| | *85.00* | *85.00* | *75.00* | *80.00* | *80.00* | *79.00* | *85.00* | *85.00* | *85.00* |
| Boston | **94.00a** | **102.00a** | **95.00a** | **96.00a** | **100.00a** | **110.00a** | ..... | ..... | ..... |
| | *92.50* | *92.50* | *105.00* | *105.00* | *105.00* | *105.00* | *120.00* | ..... | *120.00* |
| Chicago | ** **96.00** | **100.00** | **92.00** | **96.00** | **96.00** | **100.00** | **105.00** | ..... | ..... |
| | *108.00* | *105.00* | *100.00* | *103.104* | *103.104* | *103.104* | *110.00* | *110.00* | *110.00* |
| Cincinnati | * **96.00** | **98.00** | **84.00** | **92.00** | **96.00** | **98.00** | **118.00** | ..... | ..... |
| | *100.00* | *100.00* | *111.00* | *111.00* | *111.00* | *111.00* | *120.00* | *121.00* | *121.00* |
| Cleveland | ** **96.00** | **100.00** | **80.00** | **94.00** | **95.00** | **102.00** | ..... | ..... | ..... |
| | ..... | ..... | *95.00* | *104.00* | *104.00* | *106.00* | *135.00* | *135.00* | *135.00* |
| Dallas | h† **78.00** | **80.00** | **69.00** | **58.00** | **59.00** | **59.00** | **98.00** | ..... | ..... |
| Denver | * *Not in stock* | | *125.00* | *137.00* | *128.00* | *135.00* | *137.00* | *145.00* | *145.00* |
| Detroit | ‡ **106.00** | **110.00** | **100.00** | **108.00** | **112.00** | **113.00** | ..... | ..... | ..... |
| | *99.75* | *100.75* | *105.75* | *106.50* | *105.50* | *104.00* | *120.00* | *120.00* | *120.00* |
| Kansas City | * **120.00** | **120.00** | **120.00** | **120.00** | **120.00** | **120.00** | ..... | ..... | ..... |
| | *120.00* | *120.00* | *120.00* | *120.00* | *120.00* | *120.00* | *145.00* | *155.00* | *155.00* |
| Los Angeles | i *95.00* | *95.00* | *97.00* | *97.00* | *97.00* | *97.00* | *115.00* | *125.00* | *115.00* |
| Minneapolis | k *130.00* | *130.00* | *135.00* | *135.00* | *135.00* | *135.00* | *150.00* | *150.00* | *150.00* |
| Montreal | *ab*98.00* | 110.00 | 95.00 | 100.00 | 110.00 | 125.00 | ..... | ..... | ..... |
| | *175.00* | *175.00* | *175.00* | *175.00* | *175.00* | *175.00* | *175.00* | *175.00* | *175.00* |
| New Orleans | † **100.00** | **100.00** | **92.00** | **85.00** | **90.00** | **94.00** | **118.00** | ..... | ..... |
| | † *100.00* | *102.00* | *103.25* | *101.25* | *101.25* | *99.50* | *122.00* | *122.50* | *117.00* |
| New York | ‡ **105/110** | **110/115** | **100/105** | **107.50/112.50** | **112.50/117.50** | **117.50/122.50** | **150/160** | ..... | ..... |
| | | | *Range from $115.00 to $120.00* | | | | *135/150* | *145/150* | *145/150* |
| New York | ** **97.00** | **99.00** | **85.00** | **96.00** | **100.00** | **102.00** | **130.00** | ..... | ..... |
| | *98.00* | *98.00* | *105.00* | *104.00* | *104.00* | *104.00* | *116.00* | *120.00* | *120.00* |
| Philadelphia | | | **Range from $117.00 to $127.00** | | | | **117/127** | ..... | ..... |
| | | | *Range from $130.00 to $140.00* | | | | *130/140* | *140/150* | *140/150* |
| Pittsburgh | † | | **Range from $90.00 to $95.00** | | | **100/110** | ..... | ..... | ..... |
| | | | *Range from $100.00 to $110.00* | | | *100/110* | *110/118* | *145/155* | *145/155* |
| St. Louis | *e*e**119.00** | **122.00** | **97/101** | **116.00** | **123.00** | **126/128** | ..... | ..... | ..... |
| | | | *115.00e* | *128.00a* | *128.00a* | *124.00e* | *160.00a* | *160.00* | *160.00* |
| San Francisco | A† *68.00* | *68.00* | *77.75* | *75.00* | *75.00* | *78.00* | *78.00* | *78.00* | *78.00* |
| Seattle | † *77.50g* | *77.50g* | *77.50g* | *77.50g* | *77.50g* | *77.50g* | *77.50g* | *77.50g* | *77.50g* |

| | LONG LEAF Y. P. | | PLYWOOD |
|---|---|---|---|
| | Merchantable grade up to 20 ft. | | Rail freight increment (See note for base price) |
| | 2x12 Rgh | 12x12 Rgh | 3/8" / 1/2" |
| | ..... | ..... | $22.32 / $27.24 |
| | **$148.00** | **$148.00** | 22.86 / 27.90 |
| | **115.00** | **130.00** | 21.78 / 26.58 |
| | ..... | ..... | 22.86 / 27.90 |
| | **134.00** | **134.00** | 18.72 / 22.80 |
| | **125.00** | **125.00** | 21.78 / 26.58 |
| | ..... | ..... | 22.20 / 27.12 |
| | **108.00** | **98.00** | 18.72 / 22.80 |
| | ..... | ..... | 13.92 / 16.98 |
| | ..... | ..... | 21.78 / 26.58 |
| | ..... | ..... | 16.56 / 20.16 |
| | ..... | ..... | 13.38*ab* / 16.26*ab* |
| | ..... | ..... | 16.56 / 20.16 |
| | ..... | ..... | ..... / ..... |
| | **148.00** | **140.00** | 18.72 / 22.80 |
| | ..... | ..... | ..... / ..... |
| | **210/240** | **210/240** | 22.86 / 27.90 |
| | ..... | ..... | ..... / ..... |
| | **190/200** | **190/200** | 22.86 / 27.90 |
| | ..... | ..... | ..... / ..... |
| | **100/110** | **115/125** | 22.56 / 27.48 |
| | ..... | ..... | 18.72 / 22.80 |
| | ..... | ..... | ..... / ..... |
| | ..... | ..... | 10.08a / 12.30a |
| | ..... | ..... | ..... / ..... |

† F.o.b. mill. * F.o.b. city, CL, out of yard. ** F.o.b. city, CL, direct mill shipment. ‡ Deliv. to contr. CL. 1. Retail, LCL, at yard. *f* Retail, LCL, deliv. 2. Deliv. truck lots. 3. asd.

LUMBER: **Bold Face type, Southern Pine.** *Italics, Douglas Fir.* *a* Spruce *b* Tax exempt. *c* 5M lots. *d* 8–12 ft. lengths. *e* 8–16 ft. lengths. *f* 18 ft. or under. *g* No. 1 common. *h* 8 ft. lengths. *k* No. 3 common *l* 8–10 ft. lengths.

*A* Rail freight rate from Northwest mills to San Francisco are $11.50 to $15.00 per M ft bm. From Northern Calif. mills $9.00 by rail $12.00 by truck to yard with surfaced stock $2.00 to $3.00 less.

PLYWOOD: Plyform grade Fir Plywood, 4' by 8' panels, 5-ply, sanded 2 sides, water resistant glue, carload lots, delivered per 1,000 sq. ft. surface. Seattle base price on 1/2", $152.00; on 1", $174.00. Exterior concrete form 3/8" $170.00, 3/4" $194.00. For other centers add rail freight increment from table on proper size. Oiling and edge sealing charges included. *a* Lower rate by water shipment. *b* 50,000 lb. minimum.

* Freight rate increase of 6¢ per cwt., not included in these figures.

# GLASS, EXPLOSIVES, CHEMICALS

| | WINDOW GLASS: Discounts from jobbers list, Feb. 1, 1950a, Single or Double Thickness | | EXPLOSIVES: Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 200 lb. lots* | |
|---|---|---|---|---|
| | A quality | B quality | | |
| Atlanta | 79% | 80% | $0.2275 | |
| Baltimore | 70–10% | 78–10% | .2275 | |
| Birmingham | 83% | 83% | .1750 | |
| Boston | 79–10% | 79–10% | .2275 | |
| Chicago | 78% | 78% | .2275 | |
| Cincinnati | 78% | 78% | .2275 | |
| Cleveland | 78–10–10%*f* | 78–10–10*f* | .2675 | |
| Dallas | 75% | 75% | .2350 | |
| Denver | 81–5% | 81–5% | .2325 | |
| Detroit | 78–10–10% | 78–10–10% | .2275 | |
| Kansas City | 80–10% | 80–10% | .2325 | |
| Los Angeles | 75% | 80% | .23 | |
| Minneapolis | 78–10% | 78–10% | .2325 | |
| Montreal | 45–15%*bc* | 45–15%*bc* | 20.90*bi* | |
| New Orleans | 78% | 77% | .2325 | |
| New York | 82%*f* | 82%*f* | .38*g* | Price of 60% Ammonia Gelatin is $0.0125 per lb. higher than 40% |
| Philadelphia | 76% | 78% | .2275 | |
| Pittsburgh | 82% | 82% | .20 | |
| St. Louis | 80–10% | 80–10% | .2325 | |
| San Francisco | 70% | 76% | .2275 | |
| Seattle | 75% | 78% | .23 | |

*Glass: a* Jobbers' list price per box, 14 x 20, ss, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. *b* Discount from list, Apr. 1951; sales tax included, but 6% tax exemption not allowable for. *c* Single thickness. *f* Disc from Oct. 1950

*Explosives:* * Urban prices influenced by service charges or local storage and delivery regulations do not consistently reflect quantity prices in less congested areas. *g* In borough of Kings, Queens, and Richmond and in Manhattan south of Canal St., add delivery charge of $9.00 per trip. *h* F.o.b. city per 100 lb. forcite, 40%. Forcite 60%, $22.65. *i* F.o.b. Beloeil (near Montreal).

**40% Ammonia Gelatin price ranges in other than urban areas, per lb. (except Seismograph Grades)**

| | C/L 20,000 lb. net | Tons | 200 lb. lots |
|---|---|---|---|
| E. of the Miss., except Fla. and Me. | $0.175 | $0.2075 | $0.2275 |
| W. of Miss. to Rocky Mtn. States, Fla. and Maine | .18 – .1875 | .2125– .22 | .2325– .24 |
| Rocky Mtn. States | .18 – .1925 | .2125– .22 | .2325– .245 |
| Pacific N. W. States | .1775– .19 | .21 – .2225 | .23 – .2425 |
| Pacific S. W. States | .175 – .1825 | .2075– .21 | .2275– .2325 |

# PILES, TIES F.O.B.

**PILES**

Prices per linear foot, fir and pine, bark off, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

| Dimensions | Points | Length | By Rail: Pine* | By Rail: Fir |
|---|---|---|---|---|
| 12-in. at butt | 6-in. | 30 to 50-ft. | $0.43 | ..... |
| 12-in.— 2-ft. from butt | 6-in. | 50 to 59-ft. | .46 | ..... |
| 12-in.— 2-ft. from butt | 6-in. | 60 to 69-ft. | .50* | ..... |
| 12-in.— 2-ft. from butt | 6-in. | 90 to 100-ft. | ..... | ..... |
| 13-in.— 3-ft. from butt | 5-in. | 91 to 100-ft. | ..... | ..... |
| 14-in.— 2-ft. from butt | 6-in. | 50 to 69-ft. | .50/.60 | ..... |
| 14-in.— 2-ft. from butt | 6-in. | 70 to 79-ft. | .70/.75 | .85 |
| 14-in.— 2-ft. from butt | 5-in. | 80 to 85-ft. | .75/.85 | .86 |
| 14-in.— 2-ft. from butt | 5-in. | 85 to 89-ft. | ..... | .92 |
| 14-in.— 2-ft. from butt | 5-in. | 90 to 100-ft. | ..... | .94 |

* Pine piling over 80-ft. available only in limited quantities.

**RAILWAY TIES**

Prices f.o.b. per tie for carload lots:

| | | 6"x8"x8' Untr. | 6"x8"x8' Tr. | 7"x9"x8'6" Untr. | 7"x9"x8'6" Tr. |
|---|---|---|---|---|---|
| Boston | Oak | .... | .... | .... | .... |
| | Pine | .... | .... | .... | .... |
| New York | S. L. Sap Pine | $2.10 | $3.90 | $3.00 | $5.00 |
| | Mixed Oak | 2.65 | 4.20 | 3.25 | 5.50 |
| Birmingham | Hardwood | 2.00 | 3.13*a* | 2.68 | 4.16*a* |
| Chicago | Red Oak | .... | 4.00*a* | .... | 5.00*a* |
| Los Angeles | Douglas Fir | .... | .... | .... | .... |
| | Redwood | .... | .... | .... | .... |
| Philadelphia | Red Oak | 2.15/2.33 | 3.10/3.13*a* | 3.00/3.10 | 4.15/4.25*a* |
| St. Louis | White Oak | 2.94 | .... | 3.65 | .... |
| | Red Oak | 2.84 | 3.49*a* | 3.52 | 4.51*a* |
| | Sap Pine or Cypress | 3.31*a* | .... | 4.27 | .... |
| San Francisco | Douglas Fir | 2.20*e* | 3.25*ef* | 2.92*bf* | 4.30*eaf* |
| Montreal | Birch or Maple | .... *h* | .... *h* | .... *h* | .... *h* |

Tr.— Treated; Untr.— Untreated. *a* Creosoted. *b* 7" x 9" x 8'. *c* Empty cell. *e* Green. *f* F.o.b. cars. *h* No constant price available. *i* Not available.

**CHEMICALS**

**Water, sewage treatment, road work, f.o.b. carlots, New York**

| | |
|---|---|
| Bleaching powder in drums f.o.b. works, per 100 lb | $6.00 |
| Chlorine cylinders, liquid, per lb, f.o.b. works | .0875 |
| Calcium chloride, 77-80%, flaked, 100-lb. paper bag, f.o.b. works, ton | 25.00 |
| Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb | 2.20 |
| Soda ash, 58%, in paper bags, per 100 lb, dense | 1.60 |
| Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works | 1.65 |
| Sulphate of copper, in bags, 99% per 100 lb. f.o.b. works | 8.95 |

*(Continued on page 76)*

# Tiger Brand Wire Rope

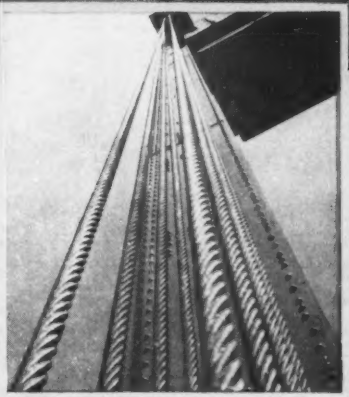
## lifts largest single-plate girder span ever erected

**WARD'S ISLAND LIFT BRIDGE** for pedestrians connects Manhattan and Ward's Island.

● The Ward's Island Lift Bridge connecting Manhattan and Ward's Island is reputed to be the largest single-plate girder span ever erected. This is a pedestrian bridge spanning part of the East River. The center span is 312 feet 2¼ inches long and is designed for an 80-foot lift.

The main span weighs 375 tons and is hoisted by 32 U·S·S American Tiger Brand Wire Ropes 1⅝ inches in diameter. The ropes are prestressed 6 x 19 Monitor Steel with Fibre Core. This construction has the requisite strength combined with the proper flexibility to give long service.

On big jobs requiring utmost dependability, engineers choose a wire rope that has proved itself in service. That's why they select U·S·S American Tiger Brand so often. But whether your job is big or small, you can find a Tiger Brand Wire Rope designed to fit your needs. Let our wire rope specialists help you choose the Right Rope for your particular jobs.



**CHAMPION WEIGHT LIFTERS** Each of the 32 Tiger Brand Wire Ropes supporting the center span lifts 11.7 tons with plenty of excess strength for safety.

***SEND FOR FREE BOOK***

American Steel & Wire Division
842 Rockefeller Building, Dept. A-1
Cleveland 13, Ohio

Please send me your Recommendation Booklet, "The Right Rope for the Job."

Name.....Position.....

Company.....

Address.....

City.....Zone....State.....

## U·S·S AMERICAN TIGER BRAND WIRE ROPE

*Excellay Preformed*

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL COMPANY
GENERAL OFFICES: CLEVELAND, OHIO

COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO · TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

UNITED STATES STEEL

## STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

| | STRUCTURAL CLAY TILE — PARTITION — SCORED ' Per M. lots of 2,000 pieces or over, | | | STRUCTURAL CLAY TILE — LOAD BEARING — SCORED Per M. lots of 2,000 pieces or over, | | | BRICK Per M. in quantity | | LIME Per ton, In paper, Carload lot, | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3x12x12 in. | 4x12x12 in. | 8x12x12 in. | 8x12x12 in. | 10x12x12 in. | 12x12x12 in. | Common backing | Straight hard | Hydrated finishing | Common hydrated | Pulverized, or lump |
| Atlanta | ..... | ..... | ..... | ..... | ..... | ..... | $27.78 | $27.78 | $19.00 | $17.50 | $17.50 |
| Baltimore | $183.00 | $195.00 | $366.00 | $415.00 | $541.00 | $618.00 | 37.00*k* | 42.00*k* | 30.00 | 21.00 | ..... |
| Birmingham | 118.00*p* | 128.00*p* | 236.00*p* | 283.00*p* | ..... | ..... | 23.50*ff* | 28.50*gg* | 26.37 | 17.10 | . . |
| Boston | 196.00† | 209.00† | 392.00† | 383.25† | ..... | ..... | 33.75*p* | 36.76*p* | 30.00† | 28.00† | . . |
| Chicago | 135.00 | 145.00 | 280.00 | ..... | ..... | ..... | 21.00 | 23.00 | 30.80 | 26.00 | .... |
| Cincinnati | 185.00*j* | 195.00*j* | 340.00*jdd* | ..... | ..... | ..... | 34.00*j* | 46.00*j* | 26.00*j* | 24.25*j* | ..... |
| Cleveland | 149.00** | 156.00** | ..... | ..... | ..... | ..... | 32.00 | 32.00 | 25.50 | 23.50 | 31.00*ee* |
| Dallas | ..... | 118.00 | ..... | ..... | ..... | ..... | 19.75 | 35.25 | 32.00 | 21.80 | ..... |
| Denver | ..... | ..... | ..... | ..... | ..... | ..... | 34.00 | 40.00 | 34.80*bb* | 28.00*bb* | 34.00*bb* |
| Detroit | 127.75 | 136.25 | 255.55 | ..... | 317.25 | 362.60 | 34.00*ec* | 32.50*ec* | 32.00 | 32.00 | ..... |
| Kansas City | 115.50 | 122.50 | 245.00 | 245.00 | 303.50 | 367.00 | 26.00 | 26.00 | 30.50 | 24.50 | 27.00 |
| Los Angeles | *r* | *r* | *r* | *r* | *r* | *r* | 21.00‡ | ..... | 34.00 | 34.00 | 35.00 |
| Minneapolis | 171.50*p* | 192.50*p* | 386.00*p* | 192.50*up* | ..... | ..... | 32.00*up* | 36.00 | 37.00*bbe* | 28.00*bbe* | 38.00*bbde* |
| Montreal | 150.00*sg* | 162.50*su* | 300.00*su* | ..... | ..... | ..... | 26.50 | 38.50 | 34.80 | 32.50 | 24.60*u* |
| New Orleans | 170.00 | 170.00 | 310.00 | 350.00 | ..... | ..... | 31.00 | ..... | ..... | 20.00 | 20.00 |
| New York | 138.70*h* | 147.90*h* | 203.40*ch* | 221.90*hn* | ..... | ..... | 38.50 | ..... | 38.00 | 32.00 | ..... |
| Philadelphia | 126.30 | 134.80 | 252.60 | 302.74 | 361.35 | 455.74 | 29.00 | 32.00 | 36.00 | 21.50 | ..... |
| Pittsburgh | 112.00 | 117.00 | 189.00 | 216.00 | 279.00 | 317.00 | 32.00 | 42.00*y* | 25.00 | 23.00 | 2.97*m* |
| St. Louis | 138.00*ee* | 158.50*ee* | 313.00*ee* | ..... | 351.00*ee* | ..... | 40.00*ul* | 36.25*u* | .85*aaa* | .65*aaa* | 1.10*aaapee* |
| San Francisco | 156.85*u** | 177.10*u** | 235.30*ddu** | ..... | ..... | ..... | 37.00 | ..... | 26.35 | 26.35 | 2.62*m* |
| Seattle | 175.00*ee* | 190.00*ee* | ..... | 190.00*ccw* | ..... | ..... | 39.00*u* | 40.00*u* | 37.50*hhh* | 1.50*ff* | 3.90*mhh* |

† F.o.b. yard Roxbury. *a* Smooth. *b* Per 50 lb. bags. *c* 6 x 12 x 12 in.-3 cell. *d* Pulverized hot. *e* 5%, 10th following month. *g* 5½ x 8 x 12. *h* F.o.b. trucks, job site N.Y.C. *j* Truck load or over. *k* $1.00 discount *l* Red face. *m* Per bbl., 180 lb. *n* 7½ x 7½ x 12. Speed title. *p* Truck lots. *q* Provincial and Municipal tax extra. *r* Not used because of earthquake danger. *s* 2% discount for cash. *t* 5½ x 8 x 11½. *u* Tax exempt. *v* Sand lime. *w* 5 x 8 x 12. *y* Stacked. *z* Pebble lime price per 80 lb. sack. *aa* Price per sack. Lime not sold per ton. *bb* LCL. *cc* Truck delivery. *dd* 6 x 12 x 12. *ee* Pebble lime. 80% common. *gg* Select. *hh* LCL. *kk* F.o.b. yard. *ll* Per 60 lb. sack, no incr., ton price no longer quoted. ** Only 1 plant producing quotes on warehouse delivery, previous quotes were truck delivery. * F.o.b. Stockton.

## PAINT, ROOFING—F.O.B. CARLOAD LOTS

| | RED LEAD | WHITE LEAD | READY-MIXED PAINT Per gal., drums | | | ROOFING SUPPLIES Carload lots f.o.b. factory | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Per 100 lb. in 600-lb. (Approx.) bbl. Dry *a* | Per 100 lb. in 100 lb. cases in oil *w* | Graphite *b* | Aluminum *c* | Ferric Oxide *d* | Rolls, slate surfaced, 85–90 lb. per sq. | Asphalt felt, per 100 lb. | Tar felt, Asphalt coating per gal. | Tar pitch 360 lb. bbl. per ton † |
| Atlanta | $21.80 | $32.925 | $1.75 | $2.70 | $1.65 | $2.06‡ | $2.06‡ | $2.06‡ | $1.00‡ | $36.00‡ |
| Baltimore | 21.55 | 32.55 | 2.65 | 4.10 | 3.22 | 2.50 | 4.17 | 4.17 | .42 | 37.00 |
| Birmingham | 21.80 | 32.925 | 3.90 | 3.40 | .... | 2.80 | 2.75 | 2.75 | .... | 40.50*ee* |
| Boston | 21.55 | 32.55 | .... | .... | .... | 2.89*gg* | 2.79*gg* | 2.79*gg* | .47*g* | 42.00*g* |
| Chicago | 21.55 | 32.55 | .... | .... | .... | 2.73‡*s* | 3.04‡*o* | 3.04‡*o* | 38.00‡*bbe* | 43.00‡ |
| Cincinnati | 21.55 | 32.55 | .... | .... | .... | 2.30 | 2.30 | 2.30 | .42*y* | 42.36 |
| Cleveland | 21.55 | 32.55 | 2.94*ppqqA* | 3.37*qqB* | 2.80*qqC* | 2.30‡*q* | 2.30‡*o* | 2.30‡*o* | .36‡*y* | 40.00‡*kk* |
| Dallas | 21.80 | 33.30 | .... | 4.05 | .... | 3.50*g* | 3.75*o* | 4.35*o* | .38 | 46.00 |
| Denver | 22.05 | 33.05 | 3.07 | 5.15 | 2.87 | 3.25*o* | 2.40*o* | 2.40*o* | .43*ff* | 42.00 |
| Detroit | 21.55 | 32.55 | 2.35 | 3.40 | 2.50 | 2.30 | 2.30*f* | 2.30 | .51 | 40.00 |
| Kansas City | 21.55 | 32.67 | .... | 2.71*ys* | 2.65 | 2.50 | 2.50*o* | 2.50*o* | .313 | 48.00 |
| Los Angeles | 21.55 | 32.80 | 3.30 | 4.50 | 4.20 | 2.97 | 2.01*e* | *l* | .44 | *l* |
| Minneapolis | 21.55 | 28.55/32.67 | .... | .... | .... | 2.30*kdd* | 2.30*kdd* | 2.30*kdd* | .34*kdd* | 37.00*v* |
| Montreal | .... | 20.70 | 3.75*t* | 4.20*t* | 4.62*t* | 3.80*t* | 3.85*tf* | 3.00*ks* | 3.15*kt* | |
| New York | 21.55 | 32.55 | 3.45*y* | .... | .... | 2.30 | 2.30*o* | 2.30*o* | .34*z* | 37.00 |
| Philadelphia | 21.55 | 32.55 | 3.25 | 3.65 | 3.15 | 2.54 | 2.94 | 2.94 | .37 | 36.00 |
| Pittsburgh | 21.55 | 32.55 | 2.65 | 2.65 | 3.15 | 2.40 | 2.81*o* | 2.81*o* | .39 | 42.00 |
| St. Louis | 21.55 | 32.55 | .... | .... | .... | 2.30 | 2.30*h* | 2.30*h* | .36*y* | 38.00 |
| San Francisco | 21.55 | 32.80 | 2.40 | 3.40 | .... | 2.95 | 4.00*aa* | .... | .49 | ..... |
| Seattle | 21.55 | 33.05 | 2.51*m* | 2.67*m* | .... | 3.58*mgcc* | 3.05*hmcc* | .... | .89*mcc* | 52.00*jmcc* |

‡ Delivered. Note: Red lead in oil 50c higher than white lead in oil. *a* Red lead prices change frequently due to pig lead price changes. *b* U. S. War Dept. Spec. 3–49A. *c* ASTM Spec. D266–31. *d* 80% minimum ferric oxide. *e* 15 lb. *f* Per 432 sq. ft. *g* F.o.b. yard, Roxbury. *h* Per roll, 65 lb. *i* Net carload lot prices; Minneapolis and vicinity. *j* Asphalt pitch. *k* Per cwt. *l* Not used. *m* 1% discount for cash. *n* Per 60-lb. *p* 6-drum. *q* Per 90-lb. roll. *r* F.o.b. factory chicago. *s* 466 Med. *t* Federal tax included. *u* Per 90 lb. square. *v* Per ton. *w* Price to large paint contractors in $1.25 less. *x* Mineral surfaced. *y* 55-gallon container. *z* Drums. *aa* Approximate cost per 100 lbs. *bb* Roofers coating and cement. Price per ton. *cc* LCL, truck delivery. *dd* 2% cash discount. *ee* Asphalt, in 100 lb. package. *ff* 5-gal drums. *gg* F.o.b. factory. *kk* Incl. freight. *A*, TTP 27. *B*, TTA 468A. *C*, TTP 31A.

## SKILLED AND COMMON WAGE RATES—PER HOUR

| | Brick-layers | Car-penters | Struct. Iron Workers | Hoisting Engineers | Plas-terers | Electrical Workers | Steam-fitters | Common Labor Building | Common Labor Heavy Const. |
|---|---|---|---|---|---|---|---|---|---|
| Atlanta | $2.75 | $2.20 | $2.335 | $2.25 | $2.75 | $2.60 | $2.75 | $1.05 | $1.05 |
| Baltimore | 3.20*o* | 2.58 | 2.90 | 2.60/2.80 | 2.75 | 2.75 | 2.65 | 1.49 | 1.49 |
| Birmingham | 2.75 | 2.125 | 2.42 | 2.06 | 2.42 | 2.50 | 2.50 | 1.10 | 1.20 |
| Boston | 2.888 | 3.475 | 2.75 | 2.80 | 2.97 | 2.80 | 2.695 | 1.815 | 1.815 |
| Chicago | 3.35*k* | 2.70 | 2.80 | 2.55 | 2.95*n* | 2.91*n* | 2.75 | 2.05*on* | 2.05*on* |
| Cincinnati | 2.90 | 2.475 | 2.665 | 1.825/2.85 | 2.75 | 2.70 | 2.64 | 1.65 | 1.65 |
| Cleveland | 3.00 | 2.8254 | 2.925 | 2.70 | 2.825 | 2.825 | 2.825 | 2.10 | 2.10 |
| Dallas | 3.4375† | 2.3375 | 2.50 | 2.475 | 3.4375† | 3.625 | 3.6125 | 1.20 | 1.35 |
| Denver | 3.00 | 2.35 | 2.35 | 2.48 | 3.00 | 2.65 | 2.75 | 1.575 | 1.575 |
| Detroit | 2.85 | 2.75 | 2.95*m* | 2.80 | 3.00*l* | 2.85 | 2.75*m* | 1.90 | 1.90 |
| Kansas City | 2.86 | 2.365 | 2.53 | 2.365/2.61 | 3.025 | 2.66 | 2.625 | 1.73 | 1.73 |
| Los Angeles | 3.00 | 2.35 | 2.50 | 2.30 | 3.125 | 2.625 | 2.625 | 1.75 | 1.75 |
| Minneapolis | 2.90 | 2.40 | 2.57 | 2.35 | 2.75 | 2.71*n* | 2.55 | 1.67 | 1.67 |
| New Orleans | 2.70 | 2.06 | 2.45 | 2.325 | 2.375 | 2.50 | 2.45 | 1.10 | 1.10 |
| New York | 3.548*w* | 3.09*bo* | 3.348*o* | 3.348*o* | 3.599*or* | 3.456*as* | 3.286*bp* | 1.90 | 1.90 |
| Philadelphia | 3.46*i* | 2.63 | 3.14† | 2.65/2.95 | 3.075*k* | 3.28/3.53*u* | 2.85*r* | 1.81 | 1.81 |
| Pittsburgh | 3.25 | 2.75 | 2.75 | 2.825 | 2.75 | 2.75 | 2.80 | 1.70 | 1.70 |
| St. Louis | 3.09*c* | 2.70*h* | 2.75 | 2.76 | 3.00 | 2.887*c* | 2.625 | 1.77 | 1.77 |
| San Francisco | 3.250 | 2.45 | 2.70 | 2.41 | 3.125 | 2.75 | 2.75 | 1.70 | 1.70 |
| Seattle | 3.30 | 2.51 | 2.71 | 2.50 | 3.00 | 2.65 | 2.75 | 2.11 | 2.00 |
| Montreal* | 1.75 | 1.55 | 1.65 | 1.45 | 1.75 | 1.65 | 1.70 | 1.15 | 1.15 |

*a* 6 hr. day. *b* 7 hr. day. *c* Incl. 3% vacation stamp fund for bricklayers; 4% for electricians plus 1% N.P. * Cost of living bonus now included in basic wage. *i* Includes 5¢ per hr. tool replacement. † Plus $5.00 daily bonus. *k* $2.45 homes and housing + 5¢ vacation fund. *l* Incl. 3½% welfare. *j* Incl. 6¢/hr. welfare. *k* Incl. 7½ ¢ /hr. welfare fund. *l* Incl. 4% vacation fund. *m* Incl. 5¢/hr. welfare ins. fund. *n* Incl. 6¢/hr. welfare fund. *o* Inc., 3% welfare fund. *p* Incl. 3% welfare fund and 3% pension fund. *r* Incl. 3% welfare fund and 20¢ pension fund. *s* Incl. 4% welfare and pension fund and 4 % vacation fund. *u* Incl. 1% welfare fund. *v* Incl. 10¢ welfare fund.

## MEXICO CITY PRICES

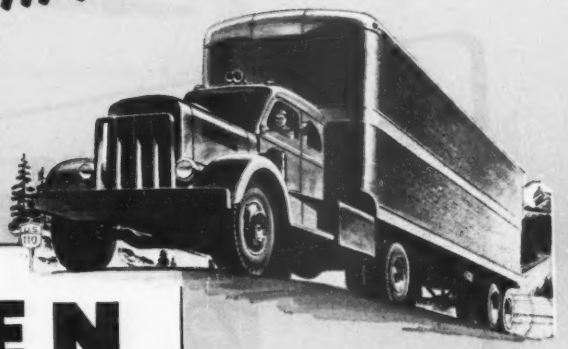
| In Pesos, F.o.b. City | | Nov.'51 | Dec.'51 |
|---|---|---|---|
| Common Wages—Building (8 hr. day) | av. per hr. | .73* | 83* |
| Common Wages—Heavy Const. (8 hr. day) | av. per hr. | 75* | 93* |
| Skilled Labor Wages | | | |
| Carpenters (8 hr. day) | av. per hr. | 1.88* | 2.25* |
| Bricklayers (8 hr. day) | av. per hr. | 1.88* | 2.25* |
| Struct. Iron Workers (8 hr. day) | av. per hr. | 1.25* | 1.25* |
| Struct. Steel Shapes 3"-15" x 12 meters | per metric ton | 1,111.01 | 1111.01 |
| Reinf. Steel, Corr. Rods | | | |
| ½" x 11 meters | per ton | 1,261.51 | 1261.51 |
| ⅝" x 11 meters | per ton | 1,251.13 | 1251.13 |
| ¾" x 11 meters | per ton | 1,240.75 | 1240.75 |
| ⅞" x 11 meters | per ton | 1,230.37 | 1230.37 |
| ⅞" x 11 meters | per ton | 1,230.37 | 1230.37 |
| 1" x 11 meters | per ton | 1,230.37 | 1230.37 |
| Gravel truck load of 3½ cu. meters | | | |
| Blue Gravel | per tr. load | 45.00 | 45.00 |
| Rose Gravel | per tr. load | 41.00 | 41.00 |
| Cement, Std. Port. (Tolteca) | per ton | 145.00 | 155.00 |
| Lumber | | | |
| Mex. 3rd Class Pine | per M ft. | 1000.00 | 1000.00 |
| 1st Class Pine | per M ft. | 1400.00 | 1400.00 |
| 2nd Class Pine | per M ft. | 1100.00 | 1100.00 |

* Increase by 1/6th—work 6 days, paid for 7 days.

**ENR Skilled Average:** (Bricklayers, Carpenters, Ironworkers) $2.758. **ENR Common Average:** $1.654.

# Put More Load and More Pay in Your Payload!

## Go Modern with



# TIMKEN Detroit AXLES

A PRODUCT OF THE TIMKEN-DETROIT AXLE COMPANY

DETROIT 32, MICHIGAN

The Accepted D A Co Standard

TRADE MARK REGISTERED

## Here's One More Reason Why!

## RECTANGULAR AXLE HOUSINGS

Your trucks will carry *more* payload—and keep within legal weight limitations—when they're equipped with Timken-Detroit Axles! That's because Timken-Detroit's rectangular steel axle housing is the most rigid and yet the *lightest*—rated capacity for rated capacity—ever built! This would still hold true even if metals of lighter weight could be used, within practical space limitations. This rugged housing is hot-forged of high-carbon steel—putting dense, compacted steel into the corners for maximum resistance to vertical and horizontal bending. A heavy steel cover is welded in place to complete a rigid, one-piece structure. Wheel spindles are made from forgings of alloy steel* for maximum surface hardness at the wheel bearings and are electrically butt welded to the housing shell. Laboratory tests and field experience have proved this Timken-Detroit rectangular axle housing carries loads with much less deflection than conventional housings of the same rated load-carrying capacity. Whether you build, buy or sell trucks, you'll be wise to standardize on Timken-Detroit Axles and Brakes!

**One series only of Timken-Detroit light-duty rectangular axle housings has high-carbon steel spindles.*

**WORLD'S LARGEST MANUFACTURER OF AXLES FOR TRUCKS, BUSES AND TRAILERS**

**PLANTS AT: Detroit and Jackson, Mich. • Oshkosh, Wis. • Utica, N. Y. • Ashtabula, Canton and Newark, Ohio • New Castle, Pa.**

# BEST for Original Equipment!

# BEST for Replacement!

## Genuine TIMKEN Detroit AXLE PARTS

The Accepted D A Co. Standard

**Look for this sign** ←

Experienced truck men know *it pays* to buy trucks equipped with Timken-Detroit Axles. These advance-designed axles perform better—stand up longer—cost less to maintain.

It's only good judgment to *keep* this high level of dependability for the entire life of your truck. Whenever Timken-Detroit parts need replacement, make sure your service man installs only Timken-Detroit original equipment parts. It took more than 40 years to perfect today's Timken-Detroit Axles—and nobody else can build *genuine* parts to maintain them.

Look for the truck dealer who displays the Timken-Detroit sign—headquarters for true Timken-Detroit parts, protected and packaged in engineered kits for maintenance work that *lasts longer!*

**The Timken-Detroit Axle Company, Detroit 32, Michigan**

**MAIL THIS COUPON FOR ILLUSTRATED FOLDER ON TIMKEN-DETROIT AXLE LUBRICATION**

**The Timken-Detroit Axle Company**
**100 Clark Street, Detroit 32, Michigan**

Gentlemen: Please send me free illustrated literature on Timken-Detroit Axle Lubrication.

NAME_____

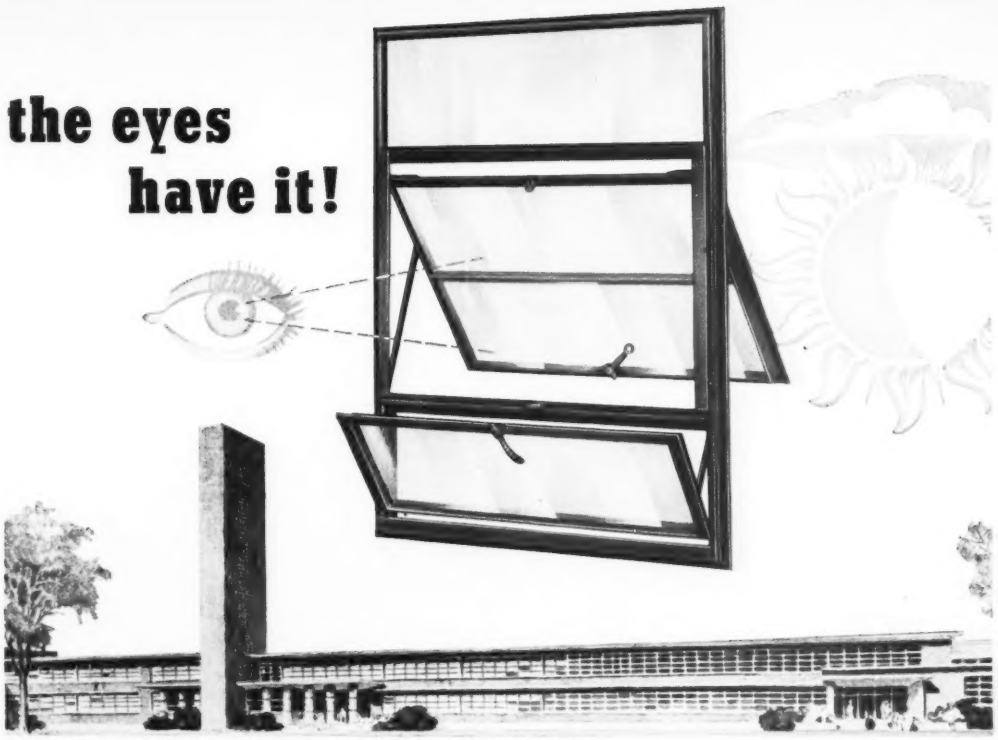
ADDRESS_____

CITY_____ STATE_____

I operate_____ (Number of trucks)

**Install only Genuine TIMKEN-DETROIT AXLE PARTS**

# the eyes have it!



SALINA HIGH SCHOOL, SALINA, KANSAS • JOSEPH W. RADOTINSKY, ARCHITECT • BAUMANN & BORDEN CONSTRUCTION CO., CONTRACTORS

## ...with CECO Metal Windows for Schools

As you read this your eyes are doing more than seeing—they are bringing into action your entire body—nerves, muscles, circulation.

And you are burning up energy—piling up fatigue in direct proportion to the amount of light available for vision. Medical science has proved eyestrain has a marked effect on the well-being of all. So it's necessary then that seeing be done with ease and in comfort. That's why proper illumination is all-important and there's where metal windows come in, for they admit more daylight than any other window.

Add to that fact, most days in most of the country are overcast in winter. Here again metal windows meet the need because only metal windows provide enough daylight for good vision on overcast days.

So there's good reason for the swing to Ceco Metal Windows in modern school construction. Besides giving more light for better sight, they permit distant vision so vital for relaxing young minds.

There are other advantages in Ceco Metal Windows—such as controlled ventilation—won't rot or warp—cost less to install, clean and maintain. And because Ceco Windows are better engineered they fit better—last longer. That's why we say—"When you use Ceco Windows you know you use the very best—you're sure of savings, too."

**CECO STEEL PRODUCTS CORPORATION**
General Offices: 5601 West 26th Street, Chicago 50, Illinois
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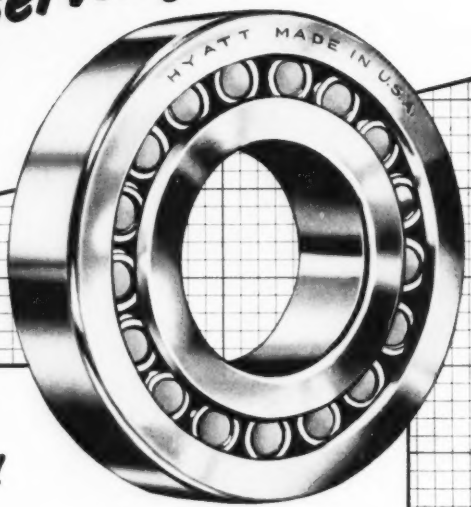
CECO STEEL

*In construction products* **CECO ENGINEERING** *makes the big difference*

1892–1952

# 60 Years serving industry




## . . . and still going like sixty!

Continuing progress has marked the last fifty-nine years for Hyatt. But 1952, our sixtieth year, finds us expanding our facilities in anticipation of the greatest year in our history.

Plant extensions, under way right now, are adding valuable manufacturing space at Harrison, and additional construction will double the available floor space at our second plant in Clark Township, New Jersey.

These new improved facilities and additional equipment combined with traditional Hyatt manufacturing skill help satisfy the ever-increasing demand for dependable Hyatt Roller Bearings.

To our many friends in the agricultural — textile — petroleum — construction — automotive — railroad — aviation — steel — material handling—and other fields, we again say "Thank You" for your continued use of Hyatt Roller Bearings.

And we intend to keep on "going like sixty" in every department to furnish better roller bearings in ever-increasing quantities to meet your requirements. Hyatt Bearings Division, General Motors Corporation, Harrison, N. J.; Chicago; Detroit; Pittsburgh; Oakland, Calif.

**HYATT ROLLER BEARINGS**

# IBEW threatens joint board breakup

The oft-repeated threat of the International Brotherhood of Electrical Workers to pull out of the National Joint Board for Settling Jurisdictional Disputes in the construction industry has become more real in recent months.

IBEW has been at odds with the AFL Operating Engineers Union over the handling of equipment in connection with installation of electric transmission lines. It has been unhappy with Joint Board decisions, and is now threatening again—this time seriously—to go its own way and have it out with the operating engineers in a test of strength.

In the background, also, are differences between the general contractors and specialty contractors, who form the management side of the Joint Board. The specialty contractors and unions in their special fields—like electricians—feel that they are outvoted on the Joint Board by representatives of general contractors.

The whole problem will be thrashed out at the Building Trades and AFL executive council meetings scheduled at Miami at the end of this month. The negotiating committees of the building trades and the contractors will also meet at that time to discuss changes in the Joint Board setup.

One solution may be to give the specialty contractors and unions more representation on the joint board. The Construction Industry Stabilization Commission—an arm of WSB—is now considering a 1952 wage policy—but won't do anything about it until after the Miami meeting.

• **History**—The Joint Board, with John T. Dunlop as impartial chairman, was set up in 1948 (ENR April 15, 1948, p. 59) by contractors and trade unions as a means of settling jurisdictional disputes voluntarily, and avoiding compulsions contained in the Taft-Hartley law.

As originally organized, 19 AFL international unions, seven specialty contractor organizations, and the Associated General Contractors. In its three years of activity, the board—on a purely voluntary basis—has had a remarkably good record for settling strikes before they start, or at least bringing them to quick conclusion once the facts of the dispute has been presented.

Observers foresaw that if IBEW pulls out and decides to go its own way, the electrical contractors will follow as a matter of course. With these two groups operating outside the board, it would be only a question of time until others followed suit.

## Salary board faces tough control job

Broadly speaking, businessmen are either grumbling about government salary control—or ignoring it.

Whether or not the gripes are justified, its a fact that the Salary Stabilization Board couldn't win a popularity contest. And so the obvious question is: Just what does the board think it is controlling, and how is it attempting to do the job?

• **What SSB sees**—Board members and their operational staff conceive their job to be this:

Let a company do what it normally does; keep a company from using extra revenue resulting from the defense emergency to pass out raises that it would not normally give; maintain the usual pay differential between lower management (foremen and supervisors) and production line workers.

SSB admits that it is really not too much concerned about the inflationary impact of salary increases to the five million people under its jurisdiction. It wants to avoid inequities between management and wage earners, and it wants the salary pattern of executives to continue as normally—but no more or less.

• **What SSB does**—The way the board is trying to carry out this "charter" is the thing that has come in for severe criticism: That SSB regulations don't fit salary problems or cover enough of them; that employers can't get fast action on their applications for approval of salary adjustments.

One reason is that salary control started late. Along with wages, salaries were frozen on Jan. 25, 1951—but WSB immediately thawed wages with its "catchup" formula. Little thought was given to salaries until last May, when salary control machinery was set up. But at that, the five-member SSB wasn't named until July. There was a good deal of debate about the establishment of a separate agency for salaries, and about the advisability of tieing such controls too closely to wages. But the final decision was to do so—probably with the solid support of organized labor.

In any case SSB came in for plenty of criticism: That it just pawed feebly at the situation; that it aped WSB too closely; that its members lacked experience in salary matters; that executive salaries are based on merit initiative, results, not units of output; that group determinations of wage increases don't really fit the individual adjustments common for management employees and executives.

• **Remedy?**—Trying to fill in the gaps, answer some of the criticisms, SSB has now obtained a new chairman, Justin Miller, head of the National Association of Radio and Television Broadcasters, and a new vice-chairman—V. Henry Rothschild II, former New York attorney and an authority on executive compensation.

Promises now are these:

There will be no special formula for top executives—SSB has given up trying to separate upper and lower level management; most of the gaps in the existing regulations will soon be filled.

SSB will open 14 field offices, and persons in charge will be authorized to make decisions in most cases; SSB will call in more panels of specialists to help it in making rulings; SSB will wait on WSB before laying down any hard and fast policy on welfare and pension plans.

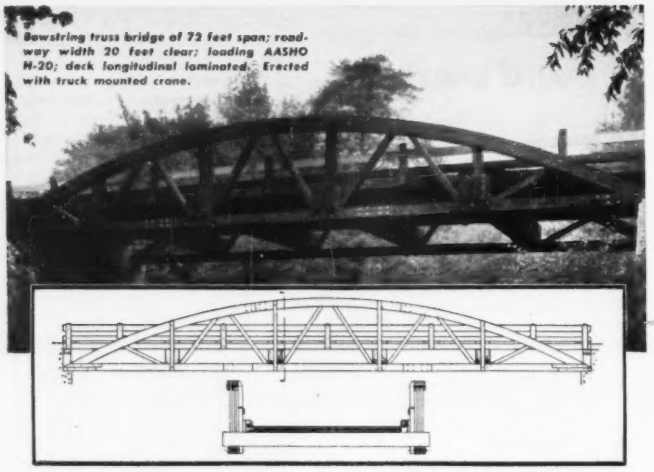
## NLRB seen losing lone dissenter in Reynolds

The recent resignation of James J. Reynolds, Jr. leaves the National Labor Relations Board without a "great dissenter" for the first time in many years. Reynolds (who quit Dec. 31 to go back to his job with U. S. Pipe and Foundry Co.) was the last of a three-man group which included J. Copeland Gray and Gerard D. Reilly who almost invariably dissented to align themselves with the management side.

With Reynolds gone, Washington observers believe, NLRB will be completely in the hands of men who—no matter how much they think they are enforcing the Taft-Hartley Act as Congress intended—basically are not sympathetic to the law. As it stood until recently, Reynolds and Gray (with the occasional help of NLRB Chairman Paul Herzog) had a chance of putting across their viewpoint against the pro-labor board members. Then two years ago, President Truman failed to reappoint Gray—naming in his stead Paul L. Styles. And Styles promptly aligned himself with the pro-labor group, assuring a sure-fire majority on most questions under discussion.

Significance of the disappearance

(Continued on next page)



Bowstring truss bridge of 72 feet span; roadway width 20 feet clear; loading AASHO H-20; deck longitudinal laminated. Erected with truck mounted crane.

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## Labor . . .

of the steady dissenting vote on NLRB is this:

There is no doubt that split votes and dissenting opinions get much better study from the courts (if the cases are referred to them) than do matters on which the board has voted unanimously. Result of the loss of the dissenting vote, say the observers, thus removes some of the encouragement to employers (and unions for that matter) to take their cases to the courts.

## Check hiring of workers for overseas projects

Reports from Washington said last week that Congressional investigators are checking into reports of "rackets" in fees charged workmen hired in the U. S. for overseas defense construction jobs.

According to Washington sources, "numerous" complaints have been made to Sen. Lyndon Johnson's Preparedness Subcommittee that private employment agencies are charging exhorbitant fees to workmen hired—5% of all their pay, including travel allowances and subsistence pay. Senators said they are curious to know if these charges are true, more curious as to why such jobs have been filled through private employment agencies.

Meanwhile, the Corps of Engineers was reported to have reiterated to its district and division offices and to its contractors a long-standing policy against the use of employment agencies for recruitment on cost-plus-fixed-fee contracts.

The Corps policy—first set out in 1942—discourages the use of employment agencies for recruitment of workers "unless all normal means are exhausted, and only when approved by the contracting officer."

## Labor briefs . . .

• **Threaten to join**—Angered because their representatives were asked to leave a city salary committee hearing for white collar workers, more than 20 unorganized Cleveland engineers and architects have threatened to join a general white-collar union representing other city employees. The professionals were disgruntled at a 7% pay increase formula accepted by a number of labor unions representing other fields of city activity.

• **Stonemasons short**—A Montreal contractor, advertising in newspapers in Toronto and Montreal for a stonemason foreman, brought editorial comment from Canadian newspapers that the trade "is almost extinct".

## ENGINEERING CONSTRUCTION CONTRACTS REPORTED TO ENGINEERING NEWS-RECORD—DECEMBER, 1951

Engineering News-Record *reports continental U. S. Construction projects of the following minimum costs — Waterworks, excavation, drainage and irrigation,* $34,000; *other public works,* $60,000; *industrial buildings,* $82,000; *other buildings,* $300,000
Four Weeks — Thousands of Dollars (000 Omitted)

| | December, 1951 | | | | | | | U. S. Cumulative Twelve Months | | % | Canada |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | New England | Middle Atlantic | South | Mid-West | West of Mississippi | Far West | Total U. S. | 1951 | 1950 | Change '50 to '51 | December 1951 |
| **Public Works** | | | | | | | | | | | |
| Waterworks | .... | 2,321 | 1,104 | 4,388 | 3,922 | 1,824 | 13,559 | 208,813 | 214,785 | − 3 | 1,174 |
| Sewerage | 1,274 | 5,418 | 3,028 | 7,962 | 4,070 | 1,779 | 23,531 | 335,089 | 287,416 | +17 | 530 |
| Bridges | 3,904 | 3,490 | 756 | 7,646 | 3,965 | 1,737 | 21,498 | 304,155 | 358,734 | −15 | 200 |
| Earthwork and waterways | 325 | 69 | 1,990 | 330 | 23,552 | 5,865 | 32,331 | 504,517 | 416,618 | +21 | 842 |
| Streets and roads | 1,959 | 14,420 | 8,714 | 12,610 | 21,154 | 9,976 | 68,833 | 1,166,988 | 1,268,333 | − 8 | 2,011 |
| Public buildings, residential | .... | 11,348 | 30,355 | 2,294 | 3,213 | 2,577 | 49,787 | 644,222 | 358,815 | +80 | 4,377 |
| Other public buildings | 4,835 | 22,370 | 19,024 | 15,358 | 11,210 | 13,501 | 86,298 | 2,057,276 | 2,405,466 | −14 | 19,672 |
| Unclassified | 237 | 2,997 | 11,735 | 3,422 | 4,161 | 8,601 | 31,153 | 946,136 | 370,964 | +155 | 9,974 |
| **Total Public** | 12,734 | 62,433 | 76,706 | 54,010 | 75,247 | 45,860 | 326,990 | 6,167,196 | 5,681,131 | + 9 | 38,780 |
| Federal government (included in above classifications) | 738 | 12,288 | 43,268 | 3,097 | 32,013 | 14,996 | 106,400 | 2,245,805 | 1,896,631 | +18 | 26,559 |
| **Private** | | | | | | | | | | | |
| Bridges | .... | .... | .... | .... | .... | .... | .... | 11,790 | 10,610 | +11 | .... |
| Industrial buildings | 20,100 | 47,266 | 30,482 | 63,062 | 57,764 | 40,590 | 259,264 | 4,123,526 | 1,682,822 | +145 | 5,908 |
| Com'l buildings, residential | 5,313 | 61,970 | 21,129 | 23,383 | 14,931 | 24,965 | 151,691 | 2,032,180 | 3,117,084 | −35 | 8,270 |
| Other commercial buildings | 1,498 | 7,830 | 5,521 | 7,100 | 3,108 | 1,340 | 26,397 | 599,859 | 975,105 | −38 | 7,400 |
| Unclassified | 70 | 868 | 12,741 | 858 | 41,099 | 9,195 | 64,831 | 670,812 | 884,855 | −24 | .... |
| **Total private** | 26,981 | 117,934 | 69,873 | 94,403 | 116,902 | 76,090 | 502,183 | 7,438,167 | 6,670,476 | +11 | 21,578 |
| **Total Engineering Construction:** | | | | | | | | | | | |
| **December, 1951 — 4 weeks** | 39,715 | 180,367 | 146,579 | 148,413 | 192,149 | 121,950 | 829,173 | .... .... | .... .... | .... | 60,358 |
| November, 1951 — 5 weeks | 39,523 | 219,676 | 165,186 | 166,400 | 317,891 | 116,099 | 1,024,775 | .... .... | .... .... | .... | 71,896 |
| December, 1950 — 4 weeks | 26,623 | 187,078 | 883,160 | 141,073 | 136,216 | 50,469 | 1,424,619 | .... .... | .... .... | .... | 38,118 |
| **Twelve Months — 1951** | 623,935 | 2,576,996 | 2,760,429 | 2,381,588 | 3,350,509 | 1,911,906 | .... | 13,605,363 | .... .... | +10 | 1,162,637 |
| Twelve Months — 1950 | 497,178 | 2,750,907 | 2,658,300 | 1,844,782 | 2,891,338 | 1,700,102 | .... | .... .... | 12,351,607 | .... | 760,838 |
| % Change '50 to '51 | +25 | −7 | +4 | +29 | +16 | +12 | .... | .... .... | .... .... | .... | +53 |

Construction business was good as the old year ended. December, 1951, compared favorably with December, 1950, in contract awards. **(See table above.)**

Last month's awards totaled $892.2 million. While the December, 1950, awards added up to a walloping $1,425 million, the figures for a year ago included two huge Atomic Energy Commission awards, one for $500 million at Paducah, Kentucky, and another for $260 million at Aiken, South Carolina, for construction of an H-bomb fuel plant.

Discounting these two awards, December, 1951 was actually ahead of December, 1950.

A large part of the December, 1951 increase was accounted for by industrial building, which has awards of $259 million last month compared to $149 million in December, 1950.

Commercial building, with awards of $151 million, was down 16% from December, 1950, and streets and roads, with awards totaling $69 million, were down about 30% from a year ago.

For the year, the Middle West showed the biggest gain in contract award volume, with a 29% increase. Contract total in this region was $2,381.6 million. New England contract award volume jumped 25%, but this area accounted for only 5% of the U. S. total, with $623.9 million reported.

States west of the Mississippi, with total volume of $3,350.9 million, again led all other regions and showed a 16% increase in volume for the year.

An interesting development was the emergence of the South as the second biggest region in contract dollar volume. With awards totaling $2,760.4 million, the South was up 4% for the year, while the Middle Atlantic states dropped from second place to third, with awards of $2,576 million, down 7% from 1950.

# Alternate design bids rule openings on Army installations into confusion

Three recent bid openings on Army warehouse construction jobs on the West Coast have resulted in almost complete confusion. That's mainly due to bids submitted on alternate designs developed by the contractors. In one case, all bids were rejected; in another instance, lower alternate design bids were rejected in favor of the low bid on the Army design; and the third case is still under consideration.

**Meanwhile, the policy of permitting alternate bids on contractor-developed substitute designs is getting a good test this week as the Army Corps of Engineers opens bids for some $25 million of permanent troop housing at Fort Ord, near Monterey, California.**

Bidding in all three cases was under Corps of Engineer procedures of long standing that permit bidding on basis of alternate designs for repetitive type buildings provided that plans and specifications as complete as those developed by the Army are submitted. The warehouse biddings show a dramatic upsurge in the submission of alternate designs under these rules—even though many in and out of the Corps of Engineers say that the alternate design clause if rigidly interpreted makes acceptance of such a bid virtually impossible.

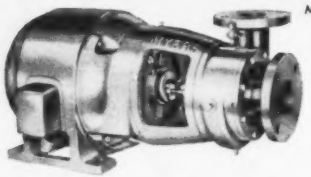
This is not to be confused with recent ruling relative to Air Force dormitories where contractors need only submit simple specifications and drawings for those elements of the design where their alternate proposals depart from the standard design (ENR Sept. 20, p. 23). First bidding under these rules will be late in January for dormitories for three Air Force bases in Arizona.

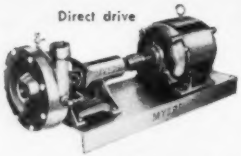
• **Analysis difficult**—The numerous alternate designs submitted on the warehouse work represent considerable time, effort and expense on the part of contractors and their engineers and on the part of material suppliers. Bid analyses by Corps of Engineers have been very difficult.

As result of the three warehouse job bids, contractors, materials people and even Corps of Engineer officials privately say that something should be done to clarify the procedure.

Others insist that alternate designs are a necessity in times of materials

(*Continued on page 84*)

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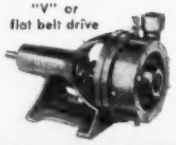


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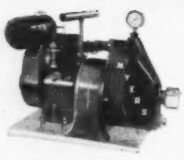


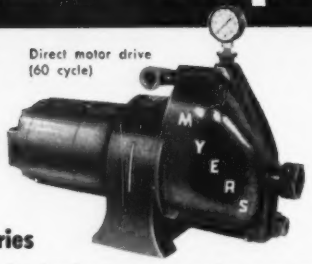


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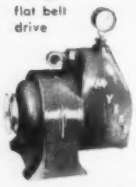


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shortage and that the procedure simply needs polishing up. This can be done, one engineer official privately says, by giving contractors "advance data on what we will accept."

• **Question quality**—Another point of contention concerns engineering the alternate designs. Some consulting engineers say the quality of work in the short time available is bound to be poor. Others readily accept the challenge and draw plans for contractors. In at least one instance this has been done on a "no contract-no fee" basis.

First of the three jobs was bid in November on warehouses at Auburn, Wash. Low bid on an alternate design basis was $3,827,782 by Zoss Construction Co. of Portland. Low bid for government design was $4,368,524. All bids were rejected, presumably because bidder designs were unsatisfactory. Informal quotations are now being received on the Army design only. Result of this bidding is loss of almost two months in getting the work underway.

Second warehouse job was for buildings at the Sacramento Signal Depot with bids open Nov. 21. Thirteen bidders submitted proposals on both Army design and alternate designs. The low bidder (ENR Dec. 6, p. 26), a joint venture called Signal Constructors, bid on the basis of precast concrete walls and wooden trusses. This compares with the Army design of poured concrete walls and steel trusses. This same group also submitted alternate proposals, using other wooden trusses and also steel trusses both in combination with precast concrete walls. All of these bids were lower than the low bid on the Army design. Yet they were all rejected in favor of the low bid on the Army design of $3,784,790 submitted by a combination of MacDonald, Young & Nelson of San Francisco and the Morrison-Knudsen Co.

• **Month's study**—In the Sacramento Signal Depot case a month expired between opening of bids and the contract award date in December. No official statement was made as to reason for rejection of the low alternate design bids. But, it can be assumed that Corps of Engineer officials did not favor precast concrete work—at least as it was proposed by the low bidder.

The third bidding was for construction of eight warehouses and other buildings at the Army's Sharpe General Depot near Stockton, Calif. Twelve bids were submitted Dec. 20 on the basis of the Army design and forty alternate bids were submitted.

(Continued on page 85)

Low bid, an alternate, was for $6,524,062 by Barrett & Hilp, Charles L. Harney, Theo. G. Meyer and Macco Construction Co., a joint venture, all of San Francisco, Calif.

By coincidence this group of contractors submitted the low bid of $8,434,826.30 on the Army design. Corps of Engineers estimate was $11,003,759. Engineers estimate that it will take a 30-day study period to determine whether the alternate design is acceptable.

## State to fight FPC on license for dam

A court battle, over states' rights, looms in Oregon because the Federal Power Commission granted Portland General Electric Co. a license to construct a power dam on the Deschutes River.

The commission's approval of the $22 million Pelton project paves the way for immediate construction—as far as the federal government is concerned. However, the Oregon Fish and Game Commission, which has led a long fight to bar dams from the Deschutes River, plans to "move in" when PGE starts construction.

John C. Veatch, chairman of the state commission, asserts that all possible action will be taken to block the power project.

• **Ready to start**—In directing that a 50-year license for the project be issued to Portland General Electric, the Federal Power Commission said the Deschutes River probably is the most readily available source of power in the Pacific Northwest. J. H. Polhemus, PGE president, said the company is prepared to start construction immediately.

The state of Oregon has twice rejected applications for permits to build the Pelton dam. First adverse ruling was on an application by Northwest Power Supply Co., a proposed joint venture by three privately-owned utilities—Portland General Electric, Pacific Power & Light and Washington Water Power Co. When this company dissolved, PGE revived the project and applied for a state permit—which was denied.

• **State vs. federal powers**—The state commission says the federal agency has no power to override the state in this case because the Deschutes River is entirely within the state. They add that the stream is not navigable.

The power company maintains that the Deschutes is navigable within the meaning of the law and that the state is without jurisdiction because the river is located on federal land.

(*Continued on page 86*)


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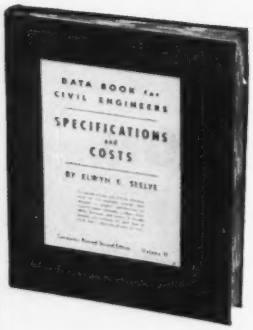


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Office building at Fairless Works, Morrisville, Pa. 25,000 sq. ft., built by Howard.

Portland General Electric Company's program also calls for construction of another dam 8 miles above the Pelton site. For this project, known as Round Butte dam, the company has applied for a permit to make geological explorations.

• **Expansion**—In other power developments, Niagara Mohawk Power Corp., received certificates of necessity permitting fast tax write-offs on various portions of a $43.8 million expansion program in New York State.

Indianapolis Power & Light Co. reported that it has spent $60 million for additions and improvements since 1945—will spend another $40 million in the next three years.

Cleveland Electric Illuminating Co. announced that it had spent $23.5 million for expansion in 1951, will spend close to $30 million in 1952.

## Highway volume in '52 will be near 1951 rate

Despite delays to projects requiring structural shapes and plate, dollar volume of highway construction in 1952 will be about the same as 1951.

Accumulated deficiencies are so great that highway departments and contractors will keep busy on grading, paving, rural road construction and such structures as can be built.

Structural and plate allotments will be cut again for second quarter, but overall carbon steel allotment will be sufficient to take care of requirements for reinforcing bars and mesh. There has been some difficulty in cashing tickets for reinforcing bars, but the allocation will be adequate to keep road construction rolling, subject to the ability to get mill acceptance of orders. That phase ought to straighten out and improve rather than grow worse.

Delays will hurt most on projects in urban and metropolitan areas where traffic congestion is worst. These projects involve large numbers of structures requiring shapes and plate. Many of these jobs will have to limp along for six to nine months or longer, until the supply-demand ratio for structurals and plate gets into better balance.

But in spite of slowdowns on steel structures, overall volume of highway construction expenditures is expected to hold up to 1951 rate. Reinforced-concrete work, including precast and prestressed, should be able to move along without serious difficulty.

That is a rough sketch of the outlook as the Bureau of Public Roads sees it. BPR has presented this view to the Budget Bureau to substantiate estimates of money needed for the next fiscal year, starting July 1.

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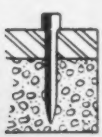

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**SPEED**—One man can set up to 5 studs per minute, as much as 100 times faster than other methods. Sets studs at whatever depth is required up to 2¾ inches, depending on material.

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**FOUR WAYS SAFE**—Plainly visible red dot indicator shows when it's cocked; safety lever must be depressed before and during squeezing of main trigger; permanently attached safety shield must be compressed against work before Stud Driver will operate. Stud Driver will not operate if tilted at more than a slight angle. Slight recoil. Low noise level.

**RUGGED**—All working parts of the Stud Driver are made of heat-treated alloy steels, housing of strong, lightweight aluminum that carries no operating stress. Lining of safety shield is a solid block of tough, resilient Du Pont neoprene.

**PRICE** for Model 450 Remington Stud Driver complete in rugged steel carrying case—only $119.50.

## Revolutionary tool fastens steel or wood to concrete or steel in seconds!

Speed construction fastening jobs and cut costs with the amazing new Remington Stud Driver. This lightweight fastening tool easily sets as high as 5 studs per minute. Easy to operate, it needs no outside power source . . . needs no other equipment!

The Remington Stud Driver is compact, rugged and safe. With one lightning-fast operation, it firmly fastens steel or wood structural pieces and fittings to concrete or steel surfaces.

Test-proved to be the world's finest and speediest fastening system, the Model 450 Remington Stud Driver is made by Remington Arms Company, Inc., *America's oldest and foremost sporting arms manufacturer.* To obtain detailed information on this time- and money-saving tool, and for the name of your nearest distributor, fill out and mail the coupon below.

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DUPONT

Remington Arms Company, Inc.
Industrial Sales Division
934 Barnum Ave., Bridgeport 2, Connecticut

I am interested in obtaining descriptive literature on the Model 450 Remington Stud Driver.

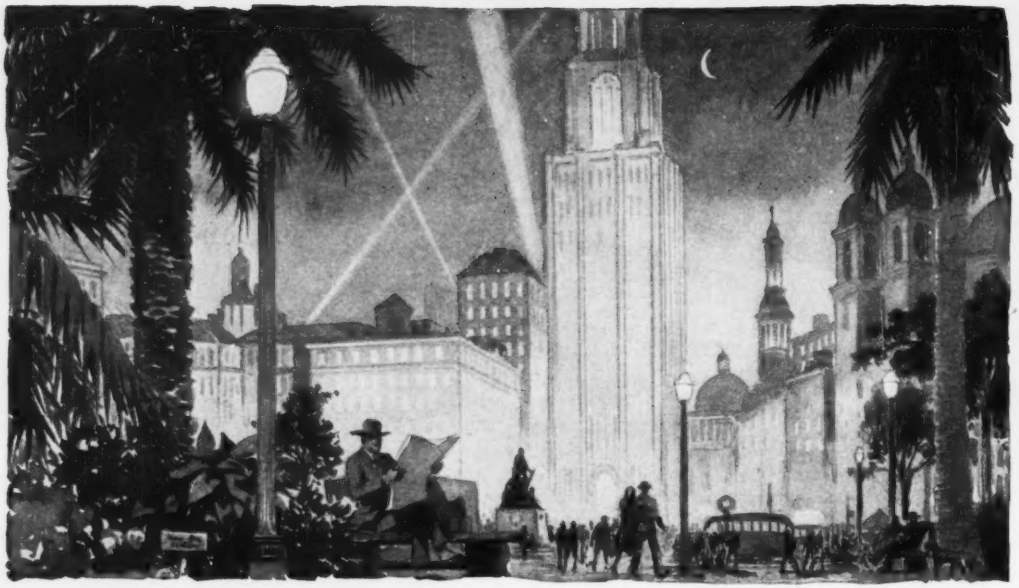
*Name*_____

*Firm*_____

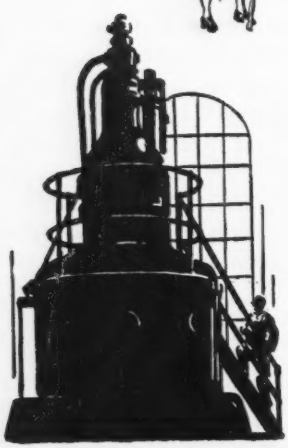
*Position*_____

*Address*_____

*City*_____ *State*_____



# Night - *like the Light of Day*



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# CONSTRUCTION REPORTS

## Bids Asked—Low Bidders—Contracts Awarded

*Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.*

*ELSIE EAVES, Manager* — *J. A. MAHONEY, Reports* — *M. R. ROESSLER, Statistics*

## NEW ENGLAND

### HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

**MAINE**—State Hy. Comn., State House, Augusta, rejected bids Nov. 14, bit. macad. road 1.342 mi., Sanford and Shapleigh. LB $315,042. CD 11/19, under LB.

**Arthur Whitcomb Constr. Co. Inc.**, 725 Main St., Keene, N. H., LB $152,102, b. conc. Marlboro St., KEENE, N. H. City, Keene, N. H. R. H. Whitaker, Concord, N. H., constr. engr. CD 1/14/46.

**North Atlantic Dredging Co.**, 62 Condor St., East Boston,

### BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Brentwood Homes**, c/o Larry Lamont, pres., 25 Glenview St., Newington, Conn. Owner Builds, Approx. $4,000,000, HOUSES, Brentwood Homes Tract, NEWINGTON, Conn.

## MIDDLE ATLANTIC

### BUILDINGS

LOW BIDS AND CONTRACTS

**Dick Constr. Co.**, 2532 Library Rd., Pittsburgh 27, Pa., CA. Approx. $300,000. PLANT OFFICE, BRIDGEVILLE, PA. Universal Cyclops Steel Co., Bridgeville, Pa., Palmgreen, Patterson & Fleming, Law & Finance Bldg., Pittsburgh 19, Pa., archts.

## SOUTH

BIDS ASKED—BUILDINGS

**Va., Suffolk**—HIGH SCHOOL—B.A. 1/17—City, construct Suffolk Negro High School. $500,000. Rudolph, Cooke & Van Leeuwen, 355 Monticello Arcade Bldg., Norfolk, archts. CD 2/17/50.

### HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

**GEORGIA**—State Hy. Dpt., 2 Capitol Sq., Atlanta,

**H. G. Smith**, Fitzgerald, Ga., CA, $99,425, bridge and 1,092 ft. paved approaches at Beaverdam Creek approx. 5 mi. Northeast of Sylvania, on Sylvania to Allendale, S. C. Road, F-068-2 (1), Screven Co.;

**Coffee Constr Co.**, Eastman, Ga., CA, $595,650, bridge and graded, paved approaches 0.229 mi. at Flint River on Oglethorpe Ave. in Albany, beginning near Front St. and ends at State Route 3, U-006-2 (2), Dougherty Co. Bids Dec. 14. CD 12/7.

▲ **GEORGIA**—State Hy. Dpt., 2 Capitol Sq., Atlanta,

**Marion Constr. Co.**, Ocala, Fla., CA $66,320. grading 6.333 mi. Blackshear to Trudie Road, beginning at end of present contract approx. 4.3 mi. east of State Route 38 and extends east to Prospect Church Community, PR-1190 (3), Pierce Co., CA $821,218, grading, paving 7.695 mi. Waycross to Jacksonville, Florida Road, beginning near intersection of Lincoln and Wilkerson Sts. in Waycross and extends south toward Folkston F-002-1 (3), Ware Co.;

**R. T. Smith**, 982 Lullwater Rd., N.E., Atlanta, Ga., CA, $75,383, grading, base and surf. 3.17 mi. Brookton to Lula Road, beginning at State Route 13 approx. 1 mi. south of Lula and extends toward Brookton, S-1238 (2), Hall Co.; CA, $174,587, grading, base and surf. 7.046 mi. Snellville to Lithonia Road, beginning at State Route 10 in Snellville and ends at point approx. 800 ft. northeast of Yellow River S-1235 (2), Gwinnett Co.;

**Hugh Steele Constr. Co.**, Centre, Ala., CA, $583,402 grading, paving 3.195 mi. relocation of Atlanta to Jonesboro Road, beginning 2.177 mi. south of Fulton County Line at end of present contract and extends south to State Route 3 approx. 3.5 mi. north of Jonesobro, FI-086-1 (2), Clayton Co.;

**B. L. Jones & Co.**, Winder, Ga., CA $88,905 grading, base, surf. 3.978 mi. Ila to Carnesville Road, beginning at end of present pavement in Ila and extends toward Carnesville, S 0891 (2), Madison Co.;

**W. Bernard Jones**, Jasper, Ga., CA, $71,462, grading, base, surf. 4.754 mi. State Route 20 to FAS Route 862 Road, beginning State Route 20 west of Cumming and extends north to FAS Route 862, PR-1345, (2), Forsyth Co.;

**Acme Constr. Co.**, Cochran, Ga., CA $69,949, surf tr. 15.68 mi. on Post Roads, in Barrow Co.; 2.55 mi. on S.R. 211 to S.R. 124 Road; 2.05 mi. Double Bridge Road; 3.2 mi. Auburn to County Line School Road; 1.5 mi. Statham to Oconee County Line Road; 1 mi. Road in Carl; 3.28 mi. Statham to Providence Church Road and 3.1 mi. Nazareth Church Road, PR-1414(2), PR-413-A (2), PR-585 (3), PR-1416-B (2), PR 586 (2) PR-1415-A (2) and PR-1412 (2), Barrow Co.;

**Leo. T. Barber**, Moultrie, Ga., CA, $69,000, grading, base and surf. 1.191 mi. and bridge at Ichawaynochaway Creek at Cordrays Mill on Morgan to Dawson Road, S-0526 (3) and SAP01661 A-(11), Calhoun Co.;

**MacDougald Constr. Co.**, Northside Dr., Atlanta, Ga., CA, $1,083,237, grading, paving and 2 bridges on Atlanta North-South Expressway, beginning approx. 6,000 ft. north east of Peachtree St. and ends approx. 500 ft. north east of Piedmont Road, UI-536 (2-9) in Fulton Co.;

**M. J. Carroll Constr. Co.**, Leesburg, Fla., CA, $109,958 grading, base and surf. 5.174 mi. Piedmont School to Monticello Road, beginning at State Route 16 near southeast city limits of Monticello and extends southeast, S-0777 (1), Jasper Co.;

**E. F. Groover**, Moultrie, GA, CA, $83,107, grading, base and surf. 6.854 mi. Appling to Martinez Road, beginning at end of present pavement approx. 6.2 mi. east of Appling and ends at State Route 104 in Martinez, Columbia Co. S-0798 (2);

**S. J. Alexander, Inc.**, 504 Hopkins St. S.W., Atlanta, Ga., CA, $157,348, wid'n., resurf. 7.1 mi. Atlanta to McDonough Road, beginning at end of present widened section ear Conley Depot and extends south to north city limits of Stockbridge, SAP-RECON.-972 (3), Clayton and Henry Counties;

**John Monagham, Inc.**, Pelham, Ga., CA $112,644, grading, base, surf. 6.75 mi. Pelham to Spence Road, beginning at State Route 65 in Pelham and extends south to Spence PR-1089 (2), Grady and Mitchell Counties. Grand total $3,566,521. Bids Dec. 14. CD 12/7.

▲† **Georgia-Alabama Paving Co.**, 2011 Andrews Rd., Columbus, Ga., CA, $1,379,698, addnl. airfield paving and pavement overlay at Mac Dill Air Force Base, Inv. 52-59, TAMPA, FLA. U.S.Eng., 575 Riverside Ave., Jacksonville, Fla. Bids Dec. 11. 12/19, under LB.

### BUILDINGS

LOW BIDS AND CONTRACTS

**A. B. Newton Co.**, Vidalia, Ga., LB, $638,000, HOUSING units, TOCCOA, GA. Toccoa Housing Auth., Toccoa, Ga. Bids Dec. 20.

**Rannie Terral**, Farmerville, La. CA $532,626. PHYSICAL EDUCATION-CLASSROOM BLDG., Grambling College, GRAMBLING, LA. State, Bd. Educ., Capitol Bldg., Baton Rouge, La. CD 12/11, under LB.

▲ **Harmon Constr. Co.**, 100 S. Indiana St., Oklahoma City, Okla., LB $1,216,618. 3 story, 360-bed HOSPITAL addn., NASHVILLE, TENN., Davidson Co., Nashville, Tenn. Hart & Mc Bryde, 2419 West End Ave., Nashville, Tenn., archts. Bids Dec. 20.

## MIDDLE WEST

BIDS ASKED—BUILDINGS

**Ill., Chicago**—EXCHANGE—B.A. 1/17—Illinois Bell Telephone Co., 212 W. Washington St., Chicago, Zone 6, exchange bldg. $600,000. Holabird & Root & Burgee, 180 N. Wabash St., Zone 1, archts. CD 10/10.

### PROJECTS COVERED

**Projects—By Size**

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

**Classes of Construction**

(Name in order of Listing)

| | |
|---|---|
| Water Supply | Latin America |
| Sewers, Waste Disposal | Public Buildings |
| Bridges | Commercial Buildings |
| Streets & Roads | Industrial Buildings |
| Earthwork, Waterways | Unclassified |

**Stages Reported**

**PROPOSED WORK:** Including appointment of engineers or architects.

**BIDS ASKED** (new announcements only). For full calendar, see also preceding issues of ENR.

**LOW BIDDERS:** On jobs below $500,000 value all low bidder news will be the final reports published on the projects inviolved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

**CONTRACTS AWARDED:** Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

**Symbols and Abbreviations Include:**

| | |
|---|---|
| † | Federal Government |
| ▲ | Project of $1,000,000 or over. |
| B.A. | Bids Asked |
| ENR | Engineering News-Record |
| CD | Engineering News-Record Construction Daily |

### BUILDINGS

LOW BIDS AND CONTRACTS

† **George W. Lathrop & Sons, Inc.**, 1510 Montcalm St., Toledo, O., CA. $419,914, 116x168 ft., concrete block DEPOT MAINTENANCE BLDG., BOILER ROOM; fireproof SHED T-14, ROUNDHOUSE, GARAGE, at Rossford Ordnance Depot, TOLEDO, O. U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va. Beliman, Gillett & Richards, 518 Jefferson St., Toledo, O., archts. Bids Nov. 13, awarded Dec. 17. CD 10/16.

**Worthington Pump Co.**, 426 Worthington Ave., Harrison, N. J., CA, $199,908, steam generator;

**General Electric Co.**, River Rd., Schenectady, N. Y., CA, $144,402, switchgear both for municipal POWER PLANT, RICHMOND, IND. City, City Hall, Richmond, Ind. Bids Oct. 29, awarded Dec. 17. CD 10/15.

**Gerhardt F. Meyne Co.**, 7 S. Dearborn St., Chicago, 3, Ill., LB, $452,190, Intermediate SCHOOL, 65 Woodside Rd., RIVERSIDE, ILL. School Dist. 96, 61 Woodside Rd., Riverside, Ill. Bids Dec. 13. CD 11/28.

**Dahlman Constr. Co.**, Box 1184, Milwaukee, Wis., CA, $998,000, general contract SHOP and TECHNICAL BLDG., MILWAUKEE, WIS. Bd. Vocational & Adult Education, 11101 N. 6 St., Milwaukee, 3, Wis. Bids Dec. 19. CD 12/27, under LB.

## WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† **Colo., Boulder**—B.A. In January—Atomic Energy Comn., P. O. Box 5400, Albuquerque, N. M., roads, parking areas and bridge at Rock Flats, Inv. 292-52-13. Extended date. CD 12/6.

† **Arkansas**—B.A. 1/15—U. S. Eng., 300 Broadway, Little Rock, bank stabilization work between Dardanelle and Reeds Ferry, ENG 03-050-52-30. Extended date. CD 11/13/51.

† **NORTH DAKOTA**—B.A. 2/1—U. S. Eng., Fort Lincoln, P. O. Box 300, Bismarck,

**Mountrail and McKenzie Counties**—superstructure for highway bridge crossing Missouri River near Sanish, in Twp. 152N., Range 93 W., approx. 120 mi. northwest of Bismarck, 50 mi. southwest of Minot, 1 mi. south of Sanish, Serial No. CIVENG 32-015-52-26. CD 12/12.

BIDS ASKED—BUILDINGS

**Colo., Denver**—SCHOOL—B.A. 1/16—School Dist., No. 1, 414 14 St., 2 story Harvey V. Kepner Junior High School. Approx. $300,000. Gordon D. White, 616 Columbine, engr. CD 7/3.

**Tex., Port Arthur**—HIGH SCHOOL—B.A. 1/22—Port Arthur Independent School Dist., Port Arthur, high school addn., science wing, print shop, remodeling. $325,000. Caudill, Rowlett, Scott & Assoc., Box 1351, College Station, Tex., engrs.-archts. CD 8/29.

**Tex., San Antonio**—PLANT—B.A. 1/22—The Borden Co., 875 E. Ashby St., 1 story, 31x236 ft. plant bldg., two wings, one 40x80 ft. and other 40x74 ft., stucco on hollow tile, concrete slab fdns. $125,000. Plans deposit $25. Atlee B. & Robert M. Ayres, Transit Tower, archts. Frank T. Drought, 117 W. Pecan St., engr.

### HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **OKLAHOMA**—Oklahoma Turnpike Auth., 100 N. E. 23 St., Oklahoma City,

**Henryetta Constr. Co.**, Henryetta, Okla., CA. $71,509, est. $70,000, concrete, steel bridge at Kelleyville, Creek Co.; CA $141,702, est. $135,000. concrete, steel bridge at Kelleyville, Creek Co.;

**Frost Constr. Co.**, Hydro, Okla., CA. $95,111, est. $90,000. 0.085 mi. bridge constr., incl. one bridge and incid. work, Lincoln Co.; CA. $138,688, est. $130,000, concrete, steel bridge at Chandler, Lincoln Co.;

**J. A. Raines**, Barnes Bldg., Muskogee, Okla., CA. $505,271, est. $490,000, concrete, steel bridge at Wellston, Lincoln Co.;

**O. R. Gragg**, Henryetta, Okla., CA. $59,608, est. $55,000, concrete, steel bridge at Bristow, Creek Co. Grand total $1,011,889. Bids Dec. 18. CD 11/28.

▲ **OKLAHOMA**—Oklahoma Turnpike Auth., 100 N. E. 23 St., Oklahoma City,

**R. R. Ryan Constr. Co.**, 1401 N. W. 5 St., Oklahoma City 6, Okla., CA. $957,212, est. $900,000. b. conc. 9.029 mi. from Lincoln-Creek County line extending east, Creek Co.;

**Cole, Carley, Hudking**, Bethany, Okla., CA. $972,019, est. $915,000. b. conc. 8.618 mi. from 2.3 mi. west of Chandler Interchange and extending 9 mi. east excepting 0.434 mi. at Interchange, Lincoln Co.;

**Standard Paving Co.**, 2119 E. 11 St., Tulsa, Okla., CA. $125,577, est. $110,000. b. conc. 0.434 mi. and Interchange paving at Chandler Interchange, Lincoln Co.;

**S. J. Groves & Sons**, 510 Wesley Temple Bldg., Minneapolis, Minn., CA. $104,285, est. $98,000, b. conc. 0.433 mi. at Stroud Interchange, Lincoln Co.; CA. $762,685, est. $750,000, b. conc. 8.18 mi. from A. T. & S. F. line north of Davenport, extending 8.6 mi. east to Lincoln-Creek County line, excepting

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0.433 mi. at Stroud Interchange, Lincoln Co. Grand total $2,921,778. Bids Dec. 18. CD 11/28.

▲ **H. B. Zachry Co.**, P.O. Box 2570, San Antonio, Tex. LB $598,903. Proj. 1, pumping plant; LB $718,100. Proj. 2, water filtration plant, LAREDO, TEX. City, Waterworks System Dept., Laredo, Tex. Myers, Noyes & Assoc., 320 Wilson Bldg., Corpus Christi Tex., and Sigler, Clark & Winston, Weslaco, Tex., engrs. Bids Dec. 17.

**Panhandle Constr. Co.**, 620 Texas St., Houston, Tex., LB $105,979, sanitary sewers LUBBOCK, TEX. City, City Hall, Lubbock, Tex., Bids Dec. 13. CD 10/6/50.

**Warren & Purtell**, Lubbock, Tex., CA. $298,997, 75 blocks street paving, quadruple asph. surf. on 6 in. base, concrete curbs and gutters, LUBBOCK, TEX. City, Lubbock, Tex. H. N. Roberts & Assoc., 1310 Avenue Q, Lubbock, Tex., archts. Awarded Dec. 21. CD 11/25/49.

**Stanolind Oil & Gas Co.**, Fair Bldg., Fort Worth, Tex., Own Forces. Approx. $175,000. underground storage reservoir, sufficient to store 50,000 bbl. propane, ODESSA, TEX. CD 12/20.

† **Otis Elevator Co.**, 1 Beach St., San Francisco, Calif. LB $169,000, est. $200,000. furnishing, installing 2 electric elevators, Hungry Horse Proj., Hungry Horse Dam, Spec. DC 3589, MONTANA. Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo. Bids Dec. 18. CD 12/11.

† **Hicks Constr. Co.**, Pinedale, Wyo., CA, $108,038, furnishing, applying buried asph. brane lining for Wyoming Canal, Station 2650 plus 00 to 2624 plus 77 and 2632 plus 00 to 3131 plus 00, Badger Lateral and Badger Lateral Wasteway, Riverton Proj., Spec. 617C-24, WYOMING. Bureau Reclamation, Dpt. Interior, Riverton, Wyo Bids Dec. 14.

† **Denver Builders Inc.**, 1420 Ulster St., Denver, Colo., LB, $123,921, Base Supply warehouse at Francis E. Warren Air Force Base, Inv. 52-10, near CHEYENNE, WYO. U.S.Eng., 1709 Jackson St., Omaha, Neb. Bids Dec. 13. CD 11/19.

**Union Power Constr. Co.**, 2431 S. University St., Denver, Colo., LB, $108,211, constr. 10 mi. inter-city electric power exchange line from Colorado Springs to Pueblo, COLORADO Cities of Colorado Springs and Pueblo, Colo. Bids Dec. 7.

## BUILDINGS

LOW BIDS AND CONTRACTS

**North Star Constr. Co.**, 1667 Snelling Ave., St. Paul, Minn., CA. $225,000. GRAIN ELEVATOR, MINOT, N. D. Minot Farmers Co-operative Elevator Co., Minot, N. D. CD 11/9.

**Nevin & Anderson**, Minot, N. D., CA general constr.; **Minot Plumbing & Heating Co.**, Minot, N. D., CA. mechanical work;

**Northwestern Electric Co.**, Minot, N. D., CA. electrical works WAREHOUSE, MINOT, N. D. Total est. Approx. $200,000. Minot Grocery Co., Minot, N. D. G. H. Bugenhagen, Minot, N. D. archt. Bids Nov. 9.

**R. F. Jordan Constr. Co.**, Angleton, Tex., Owner Builds. $360,000. 40 addnl. DWELLINGS, ANGLETON, TEX. CD 12/18.

**Padre Petroleum Co.**, Bangs, Tex., Own Forces. Approx. $225,000. unit expansion of natural gasoline and cycling PLANT, near BANGS, TEX. CD 12/18.

**Boyker & Vest**, Bellaire, Tex., Owner builds. $325,000. construct number of RESIDENCES in extens. of Sect. 4, Post Oak Terrace, BELLAIRE, TEX. CD 9/14.

**Worth Builders, Inc.**, First Natl. Bank Bldg., Fort Worth, Tex., Owner Builds. $430,000. 82 one-family frame DWELLING units, concrete fdn. in Greenbriar Addn., FORT WORTH, TEX. CD 8/11/50.

**Lakewood Gardens, Inc.**, c/o Melvin A. Silverman, 6205 Almeda Rd., Houston, Tex., Own Forces. $300,000. 25 DUPLEXES, at Lake Jackson, FREEPORT, TEX. Lloyd & Morgan, 4605 Montrose St., Houston, Tex., archts.

**Dalworth Building Co.**, Grand Prairie, Tex., Owner Builds. $310,000. 50 DWELLINGS, GRAND PRAIRIE, TEX. CD 9/20.

**C. W. Hickman**, 6717 Hempstead Rd., Houston, Tex., Force Account. $315,000. Unit. 4, 40 DWELLINGS, HOUSTON, TEX. CD 9/20.

**John B. Taub**, 3834 Wichita St., Houston, Tex., Owner builds. Approx. $325,000. 25 DWELLINGS, HOUSTON, TEX. CD 12/26.

**Pleasantville Corp.**, 6205 Almeda Rd., Houston, Tex., Owner Builds. $345,000. some addnl. Negro HOUSING units, HOUSTON, TEX. CD 12/20/49.

**M. A. Silverman**, The Builder, 6205 Almeda Rd., Houston, Tex., CA. Approx. $325,000. 50 DWELLINGS, near HOUSTON, TEX. Pleasantville, Inc., c/o M. A. Silverman, 6205 Almeda Rd., Houston, Tex. CD 10/16.

**Reed & Yancey Constr. Co.**, 3802 Richmond Rd., Houston, Tex., Owner Builds. $365,000. 55 DWELLINGS, part of Proj. 2; $300,000. 45 dwellings, part of Proj. 2, HOUSTON, TEX. CD 5/9/50.

**Andy Kirlin**, c/o Houston Bank & Trust Co., Land Dept., 119 Main St., Houston, Tex. Owner Builds. $340,000 9 high-priced DWELLINGS, HOUSTON, TEX. CD 12/18.

**Mayflower Investment Co.**, c/o Carr P. Collins, 912 Commerce St., Dallas, Tex., Own Forces. Approx. $335,000. Sect. 3, 48 DWELLINGS, IRVING, TEX. CD 10/23.

**G. S. McCreless**, 1102 Fair Ave., San Antonio, Tex., Owner Builds. $425,000. addnl., South Side SHOPPING CENTER, SAN ANTONIO, TEX. CD 12/18.

▲ **Phillips Petroleum Co.**, City Natl. Bank Bldg., Houston, Tex., Own Forces. $19,500,000. REFINERY expansion to increase production of motor fuel and high octane gasoline, SWEENY, TEX. CD 12/11.

# FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **Wash., Tacoma**—B.A. 1/22—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, masonry motor maintenance shop, McChord Air Force Base, Inv. 52-135, $175,000. Plans deposit $10. CD 11/5.

BIDS ASKED—BUILDINGS

**Wash., South Bend**—HOSPITAL—B.A. 1/17—Pacific Co. Hospital Dist., Court House, 20,000 sq. ft. hospital, $425,000. Plans deposit $25. John Graham & Co., Dexter Horton Bldg., Seattle, Zone 4, archts. CD 10/11, under LB.

**Wash., Ephrata**—SCHOOL—B.A. 1/23—School Dist. 165-55, Ephrata, high school, $800,000. Extended date. J. M. Taylor, Jr., Arcade Bldg., Seattle, Zone 1, archt. CD 12/14.

## HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

**WASHINGTON**—State Hy. Dpt., Olympia,
**Peter Kiewit Sons Co.**, Longview, Wash., CA $106,419, paving 0.28 mi. west Cowlitz River Bridge approach on Hy. 12, Kelso, Cowlitz Co. Bids Dec. 18. CD 12/4.

**WASHINGTON**—State Hy. Dpt., Olympia,
**N. Fiorito Co.**, 844 W. 48 St., Seattle, Wash., CA $457,960, extend Airport Way in Seattle 0.25 mi. to connect with Highway 1, King Co.; CA, $274,059, clearing, grading, draining, surf. 3.28 mi. Sulton to Startup, Snohomish Co.;

**General Constr. Co.**, 3840 Iowa St., Seattle, Wash., CA, $117,914, imprv. 5.8 mi. Highway 7, Grant Co. Grand total $849,933. Bids Dec. 18. CD 12/5.

† **Urban Plumbing & Heating Co.**, 103 S. 28 St., Tacoma, Wash., LB, $180,519, est. $232,100, exten. utilities, steam distr., McChord Air Force Base, ENG 45-108-52-107, TACOMA, WASH. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. Bids Dec. 19. CD 11/20.

▲ † **Premier Gear & Machine Works**, 1700 N. W. Thurman St., Portland, Ore., CA. $1,409,572, machinery, gates and stoplogs for fish-collection sys. at McNary Dam, Inv. No. 52-20, OREGON. U. S. Eng., 602 City-County Bldg., Walla Walla, Wash., Bids Nov. 6. CD 11/12, under LB.

**M. H. Golden Constr. Co.**, 3485 Nell St., San Diego, Calif., LB, $196,575, Morena Blvd.-Camino Del Rio overpass, SAN DIEGO, CALIF. City, Civic Center, San Diego, Calif. Bids Dec. 18. CD 12/3.

## BUILDINGS

LOW BIDS AND CONTRACTS

J **Putnam Henck**, Skyforest, Calif., LB, $394,600, 28,000 sq. ft. Western Junior High SCHOOL, SAN BERNARDINO, CALIF. San Bernardino City School Dist., 799 "F" St., San Bernardino, Calif. Bids Dec. 13. CD 11/13.

# CANADA

BIDS ASKED—HEAVY CONSTRUCTION

**B. C., Rioudel**—B.A. 1/16—Secy. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., wharf replacement, Approx. $35,000. Plans deposit $20. R. Blais, c/o owner, engr.

BIDS ASKED—BUILDINGS

**Ont., Paris**—SCHOOL—B.A. 1/14—Roy Anguish chn., District High School Bd., Miss N. Shannon secy., Paris, Ont., high school addns., alterations Approx. $315,200, F. C Bodley, 88 Nelson St., Brantford, archt. CD 8/9.

**B. C., Vancouver**—SHOWROOM, etc.—Bids Asked—Office Specialty Manufacturing Co. Ltd., 536 Howe St., 2 story, 50x120 ft., rein.-con. showroom, warehouse and office. C. B. K. Van Norman, 540 Seymour St., archt.

## HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

**Campeau Constr. Co.**, Billings Bridge, Ont., CA $625,000, 85 single family multiple dual purpose DWELLING HOUSES, at Uplands airport, OTTAWA, ONT. Central Mortgage & Housing Corp., 441 Queen's Quay W., Toronto, 2B, Ont.

**PRINCE EDWARD ISLAND**—Dpt. P. Wks. & Highways, Charlottetown,

**Island Constr. Ltd.**, 114 Pownal St., Charlottetown, P.E.I., CA, Approx. $300,000, paving 11.5 mi. highway from Wood Islands to Pinette. CD 4/18/47.

## BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Dominion Constr. Co. Ltd.**, 150 West First Ave., Vancouver, B. C., CA, $3,000,000, 4 story 120x130 ft., rein.-con. Dal Grauer SUB-STATION, VANCOUVER, B. C. B. C. Electric Co. Ltd., 425 Carrall St., Vancouver, B. C. Bids Dec. 10, awarded Dec. 19. CD 11/29.

**United Engineers & Contractors, Ltd.**, 359 Water St., St. John's, Newfoundland, CA approx. $300,000. 60x300 ft. concrete block TANNERY with boiler house addn., 71 mi. from St. Johns, CARBONEAU, NEWFOUNDLAND. Dpt. Economic Development, St. John's, Newfoundland. (Correction-contractor). CD 11/2. under CA.

**T. J. Colbourne Constr. Ltd.**, 338 Weston Rd., Toronto, Ont., CA, Approx. $390,000, SCHOOL, CANNINGTON, ONT. Ontario Northern District High School Bd., G. R. Yule, secy., Beaverton, Ont. CD 7/6.

**Pigott Constr. Co., Ltd.,** Pigott Bldg., Hamilton, Ont., CA, Approx. $350,000, 1 story, 60x220 ft., Princess Margaret SCHOOL East Ward, and 200x250 ft. Princess Elizabeth SCHOOL, North Ward, ORANGEVILLE, ONT. Public School Bd., Orangeville, Ont. Bids Oct. 15. CD 9/28.

**Langdon & Samson Ltd.,** 333 Wellington St. E., Sault Ste. Marie, Ont., CA, $469,889. Technical and Commercial High SCHOOL exten. SAULT STE. MARIE, ONT. Sault Ste. Marie Bd. Educ., Central School, Sault Ste. Marie, Ont. Bids Dec. 17. CD 11/21.

# PROPOSED PROJECTS

## WATER SUPPLY

▲ **Calif., Hemet**—Eastern Municipal Water Dist., Hemet, distr. lines to feed Colorado Aqueduct water to the Hemet-San Jacinto Valley. Approx. $3,000,000. Doyle F. Boen, c/o owner, engr.

▲ **Calif., Los Angeles**—Metropolitan Water Dist., 306 W. 3 St., constructing Middle Feeder System 60 in. water line from Ascot Reservoir to Los Angeles Harbor, incl. reservoir, $16,500,000. Julian Hinds, c/o owner, engr.

**O., Toledo**—City, B. R. MacRitchie, service dir., City Hall, water softening sys. $400,000. George J. Van Dorp, water comr. CD 10/8.

▲ **Tex., Victoria**—City, water pumping unit, $250,000; water distr. sys. inside city limits, $550,000; water supply main, $300,000; water supply (prob. reservoir and storage tank) $384,980. Lockwood & Andrews, Union Natl. Bank Bldg., Houston, consult. engrs. CD 6/1.

▲ **Tex., Houston**—City, City Hall, 900 Brazos St., water purification or treatment plant, acct. San Jacinto Dam Proj., $5,000,000, Freese, Nichols & Turner, 2111 Natl. Standard Bldg., consult. engrs.; imprv. 14 mi. canal to carry water to treatment plant $2,000,000, water mains from new purification plant to city mains $1,000,000, Horner & Shifrin, Shell Bldg., St. Louis, Mo. consult. engrs. CD 5/1.

## SEWERS, WASTE DISPOSAL

▲ **Tenn., Knoxville**—City, City Hall, voted bonds, sewage plant, sewage disposal sys. $5,200,000. CD 10/8.

**Tex., Houston**—City, City Hall, 900 Brazos St., North Side Sewage Treatment Plant. $400,000. Freese, Nichols & Turner, 2111 Natl. Standard Bldg., consult. engrs. CD 6/8.

▲ **Tex., Victoria**—City sanitary sewer collection pipe sys. $615,380; sewage disposal sys. $518,600. Lockwood & Andrews, Union Natl. Bank Bldg., Houston, consult. engrs. CD 6/1.

## BRIDGES

▲ **Louisiana**—State Hy. Dpt., Highway Office Bldg., Baton Rouge,

**Jefferson and Orleans Parishes**—bridge over Mississippi River between New Orleans and Gretna, $3,500,000, Masters & Henderlite, 2500 Calliope St., New Orleans, engrs.

**Tex., Houston**—Harris Co., Court House, rebuild Old Richmond Rd. as a 4-lane road from Kirby Dr. to 12 St. $360,000; wid'n. Bellaire Blvd. and drainage from Kirby Dr. to intersection Old Richmond Rd. in Bellaire, $175,000; asph. paving portions Old Katy Rd., Longpoint, Jones, Lang, Peerless, Addicks, Howell Rd., and Katy Hy. south, Precinct 4, $175,000; repave Stella Link Rd. exten., $145,000. CD 3/16.

▲ **Quebec**—Dpt. P. Wks., Quebec City, Que. (Prov. Govt.)

**Richelieu**—bridge over Richelieu River on Hy. 1 between Chambly Canton and Richelieu to replace present Yule Bridge. Approx. $1,000,000. O. Desjardins, c/o owner, engr.

## STREETS AND ROADS

▲ **NEW YORK**—State Dpt. P. Wks., Albany,

**Chemung Co.**—19 mi. arterial route system at Elmira, incl. Elmira-Horseheads Connections; Pennsylvania Ave.-Sly St.- Madison Ave. Arterial: Church St., Arterial and Broadway-College Ave. Arterial, $9,628,000.

▲ **Ont., Hamilton**—City, J. F. Berry, clk., City Hall, ratepayers voted to construct Mountain Access Road. $1,300,000. CD 8/22.

## EARTHWORK, WATERWAYS

**Calif., Los Angeles**—Los Angeles County Flood Control Dist., 751 S. Figueroa St., flood control debris basin in Burbank, $230,000. CD 8/20/45.

## AIRPORTS

▲ **Me., Presque Isle**—AIRPORT FACILITIES—U. S. Eng., 857 Commonwealth Ave., Boston, Mass., addnl. facilities, alterations, Presque Isle Air Force Base, $1,530,000.

▲ † **N. H., Portsmouth-Newington**—BARRACKS, MESS HALL, etc.—U. S. Eng., 857 Commonwealth Ave.,

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Boston, Mass., plans by Hersey & Spaulding, Hudson, N. Y., Koehler & Isaak, 922 Elm St., Manchester, N. H., Alfred T. Granger & Assoc., Brook Rd., Hanover, N. H., Tracy & Hildreth, 4 Davis Ct., Nashua, N. H., and Maurice E. Witmer, Hillside Dr., Portsmouth, N. H., consult. engrs. and archts., barracks, mess hall, administration bldg., at Air Force Base. $3,000,000. CD 12/6.

▲† **T. H., Kaneohe**—CAMP—Dpt. Navy, Bureau Yards & Docks, 18 St. and Constitution Ave. N. W., Wash. 25, D. C., reactivate air station for Marine Air Group at Naval Air Station, $18,271,940. CD 9/25.

▲ **Man., Winnipeg**—MESS—Defence Constr. Ltd., 400 Kensington Bldg., NCO's mess, $600,000; officers mess $500,000, at R.C.A.F. Station. D. W. Laird, c/o owner, engr.

▲ **Ont., Clinton**—MESS—Defence Constr. Ltd., 441 Queen's Quay W., Toronto, 2B, Ont., NCO's Mess Scheme A, Class II $600,000; officers mess Scheme A, Class I, at R.C.A.F. Station, $500,000. R. P. Opie, c/o owner, engr.

## PUBLIC BUILDINGS

**Ark., Conway**—BUILDINGS—Arkansas Military Dpt., Capitol Bldg., Little Rock, erecting buildings at Conway Municipal Airport for U. S. Property & Disbursing Office, $500,000.

**Colo., Boulder**—SCHOOL—School Dist. 3, 14 and Walnut Sts., Junior High School, $600,000. James M. Hunter, 2049 Broadway, consult. engr. and archt.

▲ **Conn., Wallingford**—HIGH SCHOOL—Town, Wallingford, high school, $2,500,000. CD 5/1/47.

▲**Ga., Brunswick**—HOSPITAL—City, plans by Abreu & Robeson, Brunswick, hospital. $1,000,000.

**Ga., Statesboro**—SCHOOL IMPRVS.—Bulloch Co. Bd. Educ., Statesboro, voted bonds, school imprvs. $800,000.

**Ill., Eldorado**—HOUSING—Eldorado Housing Auth., Dr. H. J. Raley, exec. dir., Eldorado, construct 64 unit housing, 2 story bldgs. of 4-unit and 6-unit type, brick, concrete, landscaping, etc., $800,000.

▲† **Ill., Great Lakes**—SCHOOL—Ninth Naval Dist., Great Lakes Naval Station, plans by Skidmore Owings & Merrill, 100 W. Monroe St., Chicago 3, zone technical service school addn. $6,000,000.

**Ill., Herrin** — HOUSING — Williamson County Housing Auth., Herrin, 250-unit housing southeast of here.

**Ill., Lake Zurich**—HIGH SCHOOL—School Dist. 125, Lake Zurich, plans by Burnham & Hammond, 53 W. Jackson St., Chicago, Zone 4, high school addn. $900,000. CD 1/16.

▲ **Ill., North Chicago**—HIGH SCHOOL—School Dist. 123, 1302 Argonne Dr., plans by Warren S. Holmes, Olds Tower, Lansing, Mich., high school. $2,000,000.

▲ **Ind., Crane**—DEPOT—Dpt. Navy, 18 St. and Constitution Ave. N. W., Wash. 25, D. C., plans by Friedman, Alschuler & Sincere, 223 W. Jackson St., Chicago, 6, Ill., naval ammunition depot, $4,000,000.

▲ **Ia., Clinton**—SCHOOL—Bd. Educ., J. R. Mounds, supt. Schools, Clinton, plans by Morrell & McCann, Howes Bldg., brick, concrete school, on Sino Park District site, $450,000. CD 12/7; plans by Childs & Smith, 20 N. Wacker Dr., Chicago, 6, Ill., brick, concrete Jefferson Elementary School addn., $550,000.

▲ **Mass., Lowell**—SCHOOL—City, City Hall, Junior High School, Highlands area, $1,000,000; elementary school, O'Donnel Playground area, $350,000. CD 7/13/45.

▲ **Mass., Quincy**—SCHOOL—City, School Dpt., 70 Coddington St., Junior High School, Furnace Brook area; elementary school, Hough's Neck area, addns. to Squanton Elementary School and Francis W. Parker Elementary School; $2,000,000.

▲ **Mass., Worcester**—SCHOOL—City, School Dpt., Chamber Commerce Bldg., Senior High School, Burncoat St. $1,000,000.

**Minn., Alexandria** — SCHOOL — Bd. Educ., A. Hafdal, supt., voted $585,000 bonds, school. $600,000. Traynor & Hermanson, St. Cloud, archts. CD 11/9.

▲† **N. C., Fort Bragg**—TROOP HOUSING—U. S. Eng., 308 Customhouse, Wilmington, permanent troop housing and supporting facilities, thirty-one 225-man barracks; twelve 165-man barracks; ten 105-man barracks; 12 Bn. headquarters bldgs. $38,000,000.

▲† **Okla., Fort Sill**—ACADEMIC BLDGS.—U. S. Eng., Box 61, Tulsa, Zone 2, plans by Dow Gummerson, Enid, 2 new academic bldgs. $4,300,000.

**Okla., Tulsa**—MEDICAL and DENTAL—Tulsa Medical Center, 10 and Boulder Sts., plans by D. R. Graham, Tri-States Bldg., 12 story medical and dental bldg., 10 and Boulder Aves. $1,000,000.

**S. C., Bennettsville**—HOUSING—Bennettsville Housing Auth., Bennettsville, 65 housing units. $700,000.

**Tex., Falfurrias**—HOSPITAL—Brooks Co., Court House, plans by Wyatt C. Hedrick, 5201 Fannin St., Houston, county hospital. $500,000. CD 5/28.

▲ **Tex., Houston**—DENTISTRY—University of Texas Dental School, c/o Bd. Admin. Bldg., Austin, plans by MacKie & Kamrath, 2713 Ferndale St., 5 story bsmnt., 200,000 sq. ft., rein.-con. frame, fdn. dentistry bldg., air-conditioning, etc. $4,000,000. Walter P. Moore, 4605 Montrose Blvd., and R. L. Jenkins, 4316 Blossom Ave., consult. engrs. CD 11/15/50.

**Tex., LaFeria**—HOUSING—LaFeria Housing Auth., LaFeria, 100 housing units. $750,000.

**Tex., San Antonio**—HIGH SCHOOL—Harlandale Independent School Dist., W. H. Spivey, pres., 300 W. Huff Ave., plans by Adams & Adams, Box 283, P. O. Terrell Wells, San Antonio, Junior School at Terrell Wells, near here. $590,000. CD 3/17/50.

▲ **Tex., Texas City**—SCHOOLS—Texas City Independent School Dist., Texas City, plans by Wyatt C. Hedrick, consult. engr.-archt., 5201 Fannin St., Houston,

school. $325,000; grade schools addns. $350,000; high school unit, $400,000. CD 12/26.

**Tex., Victoria** — HOUSING — Victoria Housing Auth., Victoria, plans by Jordan C. Ault & Assoc., 604 E. Goodwin Ave., 122 low rental housing units. $915,000. Lockwood & Andrews, Union Natl. Bank Bldg., Houston, consult. engrs. CD 5/17/50.

**Va., Richmond**—STATE—State, State Office Bldg., Richmond, plans by Merrill C. Lee, 601 E. Franklin St., state capitol bldg. addns. $875,000.

**Newfoundland, St. John's**—HOME—Province of Newfoundland, St. John's, Home for the Aged and Infirm, $500,000.

**Ont., Camp Borden**—MESS—Defence Constr. Ltd., 441 Queen's Quay W., Toronto, non-commissioned officers mess Scheme "A" Class I, $600,000. R. P. Opie, c/o owner, engr.

**Ont., Centralia** — MESS — Defence Constr. Ltd., 441 Queen's Quay W., Toronto, officers mess Scheme "B" Class II, $500,000. R. P. Opie, c/o owner, engr.

**Ont., Dunnville**—HOUSING—Town of Dunnville, and Central Mortgage & Housing Corp., 441 Queen's Quay W., Toronto, 2 B, Ont., 75 housing units for employes of the Monarch Knitting Co. Ltd., Metropolitan Bldg., Toronto, Ont., Approx. $700,000. R. P. Opie, c/o owner, engr.

▲ **Que., Montreal**—SCHOOL—Dpt. Youth & Welfare, Quebec City, (Prov. Govt.) school for blind boys, Approx. $1,000,000.

▲ **Que., Montreal** — BUILDING TRADES TRAINING CENTER — Montreal Building Trades Aprentices Training Comn., 2255 Laurier Ave. E., Building Trades Training Center, Laurier Ave. E., Approx. $1,000,000.

**Que., St. Hubert**—OFFICERS MESS—Defence Constr. Ltd., 1247 Guy St., Montreal, reinforcing and structural steel Officers Mess, Scheme B, Class I, at R. C. A. F. Station, $500,000, M. P. McAndreu, c/o owner, engr.

## COMMERCIAL BUILDINGS

▲ **Conn., Hartford**—OFFICE—Connecticut General Life Insurance Co., 55 Elm St., office bldg., Washington and Buckingham St. $2,000,000.

▲ **Ill., Chicago**—CHURCH—St. Mary Magdalene Church, 8326 S. Marquette St., plans by Geo. C. Smith, 2105 E. 71 St., church, 84 St. and Marquette Ave. $1,000,000. R. J. Graham, 343 S. Dearborn St., Zone 4, consult. engr.

▲ **Md., Baltimore**—RESIDENCES—Ralph W. Simmers & Son, Inc., 8426 Loch Raven Blvd., three hundred 2 story, bsmnt., brick residences, Kenilworth Ave., Golden Ring, $3,000,000.

**Md., Dundalk (Br. Baltimore)**—DWELLINGS—The Del Ray Co., 1230 St. Paul St., Baltimore, plans by Howard R. Mason, 1424 Poplar Grove St., Baltimore, sixty 2 story, bsmnt., 20x30 ft., brick, semi-detached dwellings, Delray Park. $600,000.

▲ **Md., Dundalk (Br. Baltimore)**—RESIDENCES— Pasarew Constr. Co., 3313 Sequoia Ave., Baltimore, plans by Hal A. Miller & Assoc., 2118 Maryland Ave., Baltimore, Zone 18, five hundred 2 story brick residences. $4,500,000.

▲ **Mass., Medford**—DORMITORY—Tufts College, Admin. Office, President's office, Medford, plans by Arland A. Dirlam, 673 Boylston St., Boston, dormitory, $1,065,000.

▲ **N. Y., Albany**—HOSPITAL, etc.—Albany Hospital, New Scotland Ave., plans by Curtin & Riley, 45 Newbury St., Boston, Mass., 6 story bsmnt., brick main hospital, and 5 story, bsmnt. nurses home. $2,500,000. CD 4/2/46.

**O., Akron**—HOMES—Friedhaven Constr. Co., Oakwood Dr., 290 homes in Delia Estates, incl. sewage pumping station, streets, storm and sanitary sewers, south of municipal golf course and north of Copley Rd.

▲ **O., Toledo**—HOSPITAL—Toledo Hospital, Wilson L. Benfer, supt., North Cove Blvd., 5 story hospital addn. to be built as 2 wings, joined in form of "Y" connected with present bldg. by a tunnel. $4,500,000.

▲ **Tex., Dallas**—STORE—Norman W. Bramley, 4621 Watauga St., department store. $3,250,000.

▲ **Tex., Houston**—DWELLINGS—Marvin Henry & Assoc., 3106 Randall St., 500 dwellings, $3,000,000.

▲ **Tex., San Antonio**—DWELLINGS—Frank Robertson, Majestic Bldg., Proj. 1, 40 frame dwellings, concrete slab fdn., $400,000; Proj. 2, 70 shake and redwood exteriors dwellings, concrete slab fdn., $675,000; Proj. 3, frame with brick trim, dwellings, concrete slab fdn., $550,000; Proj. 4, frame, asbestos siding, dwellings, concrete slab fdn., $360,000; Proj. 5, 50 wood and asbestos dwellings, with rock and brick trim, $450,000; an extens. of Greenlawn Estates between West Ave. and Vance-Jackson Rd.

▲ **Va., Fort Monroe**—HOUSING—U. S. Eng., North Atlantic Div., 1216 Federal Office Bldg., 90 Church St., New York, 7, N. Y., plans by E. Tucker Carlton, 1009 E. Main St., Richmond, construct, manage, finance 206 housing units. $2,000,000.

▲ **N. B., Dalhousie**—HOSPITAL—Sisters of Charity of St. Joseph, Dalhousie 5 story, brick, concrete hospital, Victoria St. $1,500,000.

**Que., Montreal**—CHURCH—Roman Catholic Parish of St. Arsene, Belanger St. E., plans by J. A. Dutrisac, 1069 Beatty Ave., Verdun, concrete, brick, stone church. $500,000.

## INDUSTRIAL BUILDINGS

**Ga., Jefferson** — PLANT — The Jefferson Mills, Inc., Jefferson, Ga., plant addn. $750,000.

▲ **Ga., St. Marys**—PLANT—St. Marys Kraft Corp., St. Marys, plant addns. $1,350,000.

▲ **Md., Sparrows Point** (Br. Baltimore)—PLANT—Bethlehem Steel Co., 701 E. 62 St., Bethlehem, Pa., sintering plant, conveyor galleries, junction house, screening bldg., ore and sintering bldg., dust screening bldg., unloading bldg., sinter screening bldg. and filter bldg. $4,000,000.

▲ **Mo., Kansas City**—WAREHOUSE—John Deere Plow Co., 400 19 St., Moline, Ill., plans by Marshall & Brown, 1016 Baltimore Ave., Kansas City, Mo., first unit 160,000 sq. ft., second unit 80,000 sq. ft. warehouse. RFD from here, Jackson Co. $1,500,000. CD 12/11.

▲ **O., New Philadelphia**—MACHINE TOOL PARTS PLANT—Warner & Swasey Co., C. J. Stilwell, pres., 5701 Carnegie St., Cleveland, 1 story machine tool parts plant. $1,500,000.

**Pa., Harmarville**—PLANT—Wheeling Steel Corp., Wheeling Steel Corp. Bldg., Wheeling, W. Va., coal washing plant, facilities for coal washing, dryer and coal handling and conveyor system. $700,000. Allen & Garcia, 332 S. Michigan Ave., Chicago, Ill., consult. engrs., M. D. Ayers, c/o owner, engr.

▲ **Pa., Harrisburg**—BLAST FURNACE—Central Iron & Steel Co., S. Front St., blast furnace, 2 open hearths, coke ovens and chemical recovery plant. $30,000,000.

▲ **Pa., Pitcairn**—SHOP—The Pennsylvania Railroad, D. L. Sommerville, ch. engr. (Central Region) Penna. Station, Pittsburgh, diesel locomotives shop. $1,000,000. DeLeuw, Cather & Co., 150 N. Wacker Dr., Chicago 6, Ill., consult. engrs. CD 11/12.

**Tenn., Alcoa**—PLANT—Aluminum Co. of America, Gulf Bldg., Pittsburg, plant addns. $500,000.

▲ **Tenn., Cleveland**—PLANT—John L. Hutcheson, Jr., Cleveland, plant addns. $1,000,000.

**Tenn., Covington**—PLANT—Olin Industries, Inc., Covington, battery plant addns. $400,000.

▲ **Tenn., Knoxville**—MILL—Brookside Mills, Inc., 601 Baxter Ave. N. W., mill addns. $3,000,000.

**Tenn., Kingsport**—PLANT—Tennessee Eastman Corp., Kingsport, plant addn. $500,000.

**Tenn., Memphis**—PLANT—Romac Mills, 481 E. Mallory Ave., plant addns. $500,000.

▲ **Tex., Beaumont**—PLANT—Magnolia Petroleum Co., Magnolia Bldg., Dallas, gasoline production plant, $5,500,000.

▲ **Tex., Garland** — SHOPS, etc. — Luscombe Airplane Corp., Garland, instruments mfg. shop bldg. $225,000; airplane manufactured parts incl. B-36 elevators and door assemblies $275,000; general expansion and imprvs. to existing airplane parts mfg. plant, $1,000,000.

▲ **Tex., Houston**—CHEMICAL PLANT—Phillips Chemical Co., subsidiary of Phillips Petroleum Bldg., c/o City National Bank Bldg., Houston, chemical plant to mfg. ammonia, methanol and a variety of other petrochemicals. $40,000,000. CD 7/26/48.

**Tex., Port Arthur**—PLANT—Gulf Oil Corp., Gulf Bldg., Houston, sulphur-recovery plant unit. $600,000. CD 3/22/51.

▲ **B. C., Vancouver**—FURNACE—Vancouver Steel Co. Ltd., Granville Island, Vancouver, electric furnace. $2,500,000.

▲ **Man., Winnipeg**—OIL REFINERY—McColl-Frontenac Oil Co. Ltd., 360 St. James St. W., Montreal, Que., oil refinery, near here. Approx. $12,000,000.

▲ **Que., St. Johns**—FACTORY—Babb Co. Canada Ltd., 7 Grand Bernier Rd., St. Johns, 412x785 ft. factory. $1,000,000.

## UNCLASSIFIED

▲ **California**—GAS PIPELINE—Southern California Gas Co. & Southern Counties Gas Co., 810 S. Flower St., Los Angeles, 23.5 mi. natural gas pipe line between Inglewood and Los Angeles, Los Angeles Co. $2,611,875. CD 1/17/50.

▲ **Md., Sparrows Point** (Br. Baltimore)—ORE PIER—Bethlehem Steel Co., 701 63 St., Bethlehem, Pa., extension of 1,000 ft. to existing steel ore pier sheet piling, concrete face, dredging, etc. $5,500,000.

† **Mass., Wellfleet**—FACILITIES—U. S. Eng., 857 Commonwealth Ave., Boston, addnl. facilities at Camp Wellfleet. $950,000.

▲ **New Mexico**—RURAL DISTRIBUTION LINES—Central Valley Electric Co-operative, Artesia, 167 mi. rural distr. lines, 18 mi. tie lines, complete previously approved construction and headquarters facilities, Eddy Co. $1,000,000. H. N. Roberts & Assoc., Lubbock, Tex., consult. engrs. Paul L. Frost, c/o owner, engr. CD 1/31/51.

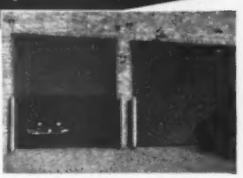
**Oklahoma**—RURAL DISTRIBUTION LINES—Canadian Valley Electric Co-operative, Seminole, 249 mi. rural distr. lines and sys. imprvs., Hughes Co. $730,000.

▲ **Tex., Burnet**—TOURIST CENTER—State Park Bd., c/o Frank D. Quinn, State Bldg., Austin, tourist center at Inks Lake, near here. $1,000,000.

▲† **Tex., Corpus Christi**—PLAYGROUNDS, etc.—Bureau Reclamation, Dpt. Interior, Interior Bldg., 19 and C Sts., N. W. Wash. 25, D. C. recreational facilities and playgrounds in Dam and Reservoir Area near Oakville, $509,000; Wildlife Project, incl. fencing and facilities for care of wildlife near Oakville, $600,000; power penstock in Dam and Reservoir area near Oakville, $586,000; earth-fill dam and reservoir (for power and supplying 4,000 sq. mi. Industrial Area with water), in Oakville, $37,720,000.

▲ **Tex., Denison**—TOURIST CENTER—State Park Bd., c/o Frank D. Quinn, State Bldg., Austin, tourist center at Lake Texoma on a 450-acre tract now named Eisenhower Park. $1,000,000.


Fit the closure to the opening with KINNEAR Rolling Doors



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# CONSTRUCTION REPORTS-Second Section

## NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
January 15 Massachusetts

### HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Daniel O'Connell's Sons, Inc.**, 480 Hampden St., Holyoke, Mass., LB, **$1,788,507**, refuse incinerator, No. E5189, HARTFORD, CONN. City, Municipal Bldg., 550 Main St., Hartford, Conn. Bids Dec. 20. CD 11/20.

### BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Stratford Improvement Co.**, c/o owner, CA, $1,000,-000, Petroleum Products PLANT, Great Salt Meadows, STRATFORD, CONN. Buckley Bros., 1 Seaview Ave., Bridgeport, Conn.

▲ **W. J. Megin, Inc.**, 51 Elm St., Naugatuck, Conn., LB, **$1,679,253**, HOSPITAL addn. Watertown Ave. and Robbins St., WATERBURY, CONN. Waterbury Hospital, Robbins St., Waterbury, Conn. Bids Dec. 18. CD 11/28.

▲ **Massacoe Builders, Inc.**, Meadow Plains Rd., Simsbury, Conn., CA, **$1,129,774**, Gordon C. Swift Junior High SCHOOL, WATERTOWN, CONN. Town, Watertown, Conn. Bids Dec. 11, awarded Dec. 24. CD 12/19, under LB.

## MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
January 15 Maryland
STREETS AND ROADS
January 18 Pennsylvania January 19 New York

▲† **N. Y., Niagara Falls**—FIRE STATION, etc.—B.A. 1/23—U. S. Eng., 80 Lafayette St., New York, Zone 13, fire station, bachelor officers quarters, guard house, warehouse, refrigeration storage bldgs. and utilities at Niagara Falls Air Force Base, $1,583,000. Plans deposit $20. CD 12/14.

▲† **N. Y., Westhampton**—DORMITORIES—B.A. 1/23—U. S. Eng., 80 Lafayette St., New York, Zone 13, addnl. dormitories, Suffolk County Air Force Base, Eng. 206. $1,030,000. Plans deposit $10. CD 12/12.

BIDS ASKED—BUILDINGS

**N. Y., Rockville Center**—B.A. 1/15—Bd. Educ., Union Free School Dist. 21, Southside High School, Hillside Ave., Rockville Center, William S. Covert Elementary School, N. W. C. Long Beach Rd. and Willian St. $850,000. CD 7/23/48.

### HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, **Green Island Constr. Co.**, 594 Broadway, Watervliet, N. Y., LB $316,950, est. $340,000, Rosa Road-Hillside Ave. Rive Rd., (County Roads 2N, 3N and 4N), 3.98 mi. Fa.S.S. 51-28, Schenectady Co.; LB **$149,-537**, est. $167,000. 4.8 mi. Oriskany Falls-Lairdsville, Pt. 2, FA.SS. 51-27, Oneida Co.;
**John Cascione**, 71-53 69 St., Glendale, N. Y., LB **$69,098**, est. $72,000, 19.1 mi. landscaping State Hys. Nos. 9018, 8474, E 8438, 8470, E 8440, 8444, 8445, 8460, 1841, 8291, 1833, 1274, FA.RC. 51-51, Suffolk and Nassau Counties;
**John Arborio, Inc.**, W. Cedar St., Poughkeepsie, N. Y., LB **$775,001**, est. $813,000, 2.48 mi. Rhinebeck-Hyde Park S. H. 432; Hyde Park-Staatsburg S.H. 5135, FA.RC. 51-76, Dutchess Co.;
**M. Merola & Son Constr Co.**, 200 Durston Ave., Syracuse, N. Y., LB **$208,597**, est. $237,000, 5.18 mi. Stockbridge Falls-Merrillsville, FA.SS. 51-26, Madison Co.;
**Serafini Constr. Co., Inc.**, P.O. Box 265, Binghamton, N. Y. LB **$825,635**, est. $835,000. 1.67 mi. Rochester City Ridge Rd. West (Mt. Reed Blvd. to Lake Ave.). FA.C. 51-7, Monroe Co.;
**Lancaster Development, Inc.**, 85 Brandl St., Lancaster, N. Y., LB **$1,667,723**, est. $2,057,000. 33.75 mi. Penn State Line-Dunkirk, Pts. 1, 2. and 3, S.H. 9030, 8334 and 8344 Dunkirk-Silver Creek S.H. 8304, FA. RC 51-82, Chautauqua Co.;
received no bids Dec. 19. 0.72 mi. Edgemere Dr. (County Rd.), FA.SS 51-29, Monroe Co., will readvertise. CD 11/29.

▲ **Cayuga Foundation Corp.**, 30 Vesey St., New York, 7, N. Y., CA, **$2,692,585**, Route 110-C. Liberty Ave. connection, Pitkin and Liberty Aves., Grant Ave. to 77 St., Brooklyn and Queens Boros, NEW YORK. Bd. Transportation, 370 Jay St., Brooklyn, 1, N. Y. Bids Dec. 10. CD 12/17, under LB.

▲ **General Electric Co.**, 570 Lexington Ave., New York, 22, N. Y., CA, **$2,623,258**, auxiliary power equipment at I. R. T. Power House, 74 St. and East River, Contract P-83, NEW YORK, N. Y. Bd. Transportation, 370 Jay St., Brooklyn, 1, N. Y. Bids Nov. 29. CD 11/15.

▲ **NEW JERSEY**—State Hy. Dpt., State Hy. Office Bldg., Trenton,
**George M. Brewster & Son**, 275 W. Ft. Lee Rd., Bogota, N. J., CA, **$1,372,933**, grading, paving 1.96 mi. Route 26 extension (Trenton Freeway) from Perry to Strawberry Sts., Federal Aid Proj. UI-190 (8), Mercer Co. Bids Nov. 15, awarded Nov. 29. CD 11/20, under LB.

▲ **Joseph E. Hefferman**, Guilford St. and Rowland Ave., Phila. Pa., Separate Contracts. Approx. **$2,000,000**. RESIDENTIAL DEVELOPMENT, Oak Lane Manor Sect., CHELTENHAM, PA.

▲† **Dpt. Army**, Middleton, Pa., rejected bids test bldg. and 4 engine test cells, MIDDLETOWN, PA. LB $2,059,267. Graham, Anderson, Probst & White, 80 E. Jackson Blvd., Chicago, Ill., engrs.-archts. CD 8/6, under LB.

▲ **McCloskey & Co.**, 1620 W. Thompson St., Phila. Pa., CA. $1,616,160, CENTRAL KITCHEN, DINING and STORAGE BLDG. at hospital, PHILA., PA. Dpt. P. Health, City Hall Annex, Phila. Pa. Eugene A. Stopper, 2112 Spruce St., Phila., Pa., archt. Bids Nov. 28.

▲ **Harry Fishman & Sons**, 1900 Devereaux St., Phila. Pa., CA. $1,400,000. RESIDENTIAL DEVELOPMENT, Tyson St., PHILA. PA. Penrway Co., 1900 Devereaux St., Phila. Pa., Christian Fries, 3701 N. Broad St., Phila., Pa., archt.

▲ **Ross Electric Constr. Co.**, 106 Fairmount Ave., Phila. Pa., LB $282,745. Schedule A, underground conduit sys.; LB $810,742, Schedule B, high voltage distr. sys. PHILA. PA. Dpt. P. Wks., City Hall Annex, Phila. Pa. A. Zane Hoffman, c/o owner, ch. engr.

▲† **Ayers-Hagan-Booth, Inc.**, 35 Westminister St., Providence, R. I. CA **$1,096,000**. H-8 hydraulic catupult, NOY 29959, PATUXENT RIVER, MD. Dist. P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C. CD 12/17 under LB.

### BUILDINGS

LOW BIDS AND CONTRACTS

▲ **United Engineers & Constructors, Inc.**, 1401 Arch St., Phila., Pa., CA, **$5,000,000**, Silicone PLANT addn., WATERFORD, N. Y. General Electric Co., River Road, Schenectady, N. Y.

▲ **B. J. Lucarelli & Co.**, 22 Orchard St., Jersey City, N. J., LB, **$2,660,000**, Peter J. McGuire HOUSING, CAMDEN, N. J. Camden Housing Auth., City Hall, Camden, N. J. Bids Dec. 18. CD 11/28.

▲ **Food Fair Stores, Inc.**, 2223 E. Allegheny Ave., Phila., Pa., Separate Contracts, **$300,000**, OFFICE BLDG., **$1,600,000**, grocery storage WAREHOUSE, LINDEN, N. J. Louis Kassoff, company archt.

▲ **P. S. Edwards Co.**, R.D. 3, Library, Pa., CA. Approx. $1,000,000. 1 story, 56x60 ft., brick truck MAINTENANCE BLDG., CORAOPOLIS, PA. The Texas Co., Rand Bldg., Buffalo, N. Y.

▲ **Maguire Constr Co.**, 49 Rittenhouse Pl., Ardmore, Pa., CA. **$1,400,000.** RESIDENTIAL DEVELOPMENT, Ellis Rd., HAVERTOWN, PA. Triems Co., Inc., 49 Rittenhouse Pl., Ardmore, Pa.

**S. Altman, Inc.**, 225 S. 15 St., Phila. Pa., Separate Contracts. Approx. **$500,000**. RESIDENTIAL DEVELOPMENT, Englewood St., PHILA. PA. Henry S. Berg, 1411 Walnut St., Phila. Pa., archt.

**Daniel A. Dintenfass, Inc.**, 6905 Castor Ave., Phila. Pa., Separate Contracts. **$600,000**. RESIDENTIAL DEVELOPMENT, Philli-Elena and Baldwin Sts., PHILA., PA. Henry S. Berg, 1411 Walnut St., Phila. Pa., archt.

**James J. Clearkin**, 4459 Leiper St., Phila. Pa., CA. **$900,000**. CHAPEL and MOTHER HOUSE and road constr. PHILA. PA. Missionary Servants of The Most Blessed Trinity, 3501 Solly Ave., Phila. Pa. CD 9/19, under LB.

**Cedarbrook Corp.**, 1325 Walnut St., Phila. Pa., Separate Contracts. Approx. **$800,000**. RESIDENTIAL DEVELOPMENT, Knights Rd., PHILA. PA.

**Frank H. Wilson Co.**, 125 Coulter Ave., Ardmore, Pa., LB **$724,235**. Penn Village HOMES, POTTSTOWN, PA. Montgomery Co. Housing Auth., Pottstown, Pa., Bids Dec. 14. CD 12/5.

## SOUTH

BIDS ASKED—BUILDINGS

▲ **Ga., Moultrie**—HOUSING — B.A. 1/16 — Moultrie Housing Auth., Moultrie, 125 housing units, $1,000,-000. Extended date. CD 12/7.

▲ **Ala., Gadsden**—WAREHOUSE—B.A. About 1/21—Goodyear Tire & Rubber Co., Gadsden, warehouse, $1,600,000. Horace Weaver, Swann Bldg., Birmingham, archt. CD 11/20.

### HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Fred Howland, Inc.**, 1451 N. W. 20 St., Miami, Fla., CA, **$1,172,867**, Contr. SW 16, water treatment plant, Galloway Rd., MIAMI, FLA. Dpt. Water & Sewers of City, 3342 Dinner Key Dr., Miami, Fla. Bids Dec. 6. CD 12/13, under LB.

▲ **Nichols Eng. & Research Corp.**, 70 Pine St., New York, N. Y., LB, **$2,898,000**, refuse incineration plant, MIAMI, FLA. City, City Hall, Miami, Fla. Bids Dec. 19. CD 8/17.

▲ **TENNESSEE**—State Hy. Dpt., Nashville.
**H. E. Wolfe Constr. Co.**, St. Augustine, Fla. CA **$732,193**, crushed stone surf. 6.491 mi., sect. State Rte. 26 from point 1 mi. southwest of Doweltown and exten. to Smithville, Proj. F 026-1 (8), Dekalb Co.;
**J. B. Michael Co.**, 1021 Heywood St., Memphis, Tenn. CA **$695,133**, grav. surf., construct 5 bridges 3.917 mi. State Rte. 14 from point approx. 4 mi., north of Raleigh and exten. to Pleasant Ridge Rd., Proj. No. F 014-2 (10), Shelby Co. CD 12/19, under LB.

▲† **J. A. Jones Constr. Co.**, P. O. Box 966, Charlotte, N. C. and **Charles H. Tompkins Co.**, 907 16 St., N. W. Wash. 6, D. C., CA. **$9,164,098**, est. $8,-936,000. construct Old Hickory Lock and Dam, Cumberland River, Davidson City, CIVENG 40-058-52-5B, TENNESSEE. U. S. Eng., 3031 U. S. Court House, Nashville, Tenn., Bids Dec. 12, awarded Dec. 27. CD 12/17, under LB.

▲† **Tennessee Valley Authority**, New Sprankle Bldg., Knoxville, Tenn. Owner Builds. **$1,315,335**. electric sub-station, SPRING CITY, TENN.

### BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Virginia Engineering Co.**, Newport News, Va. CA **$2,218,000**. HOUSING units, NEWPORT, VA. Newport News Redevelopment & Housing Auth., Newport News, Va. Bids Dec. 19. CD 11/16.

▲ **Crystal Lumber Co.**, 620½ W. 4 St., Winston-Salem, N. C. CA **$1,196,500**. HOUSING, Proj. NC 9-4, FAYETTEVILLE, N. C. Fayetteville Housing Auth., Fayetteville, N. C. Bids Dec. 19. CD 11/27.

▲ **Arnold Constr. Co.**, Palm Beach, Fla., CA, **$479,125**, Tarpon Springs SCHOOL, CA, **$403,607**, Largo SCHOOL; CA, **$601,077**, St. Petersburg Elementary School, CLEARWATER, FLA. Pinellas Co. Bd. P. Instruction, 305 Haven St., Clearwater, Fla. Grand total $1,382,-809. Bids Dec. 19. CD 11/27.

▲ **Shelby Constr. Co.**, 1108 Canal St., New Orleans, La. CA **$1,457,504**. HIGH SCHOOL, BURAS, LA. Plaquemines Parish School Bd., Pointe-a-la-Hache, La. CD 12/3, under LB.

▲ **Whittenberg Constr. Co.**, 2214 S. Floyd St., Louisville, Ky. LB **$4,250,000**. fourteen 1-bed room, two hundred and fifteen 2-bedroom, and forty-five 3-bedroom HOUSING units, ELIZABETHTOWN, KY. H. G. Whittenberg & Whittenberg Constr. Co., 2214 S. Floyd St., Louisville, Ky.

▲† **J. W. Bateson Co., Inc.**, Irwin-Keesler Bldg., Dallas, Tex. CA **$22,840,017**. 42 BARRACKS, incl. four B. O. Q., 1188 140, 3 reg. HG, 11 MOTOR REPAIR SHOPS, CARPENTER PAINT SHOP, UTILITY SHOP, 3 WAREHOUSES, COMN. BLDG., SUB-STATION and GUARD HOUSE, Eng. 15-029-52-7, FORT CAMPBELL, KY. U. S. Eng., 830 W. Broadway, Louisville, Ky. Awarded Dec. 26. CD 12/27, under LB.

## MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
January 15 Wisconsin
STREETS AND ROADS
January 15 Wisconsin

BIDS ASKED—BUILDINGS

▲ **Ill., Joliet**—FACTORY UNIT—Bids Asked—Caterpillar Tractor Co., Route 6 at Des Plaines River, Joliet, factory unit to be added to Joliet plant, $3,000,000. Crenshaw & Jost, 512 Court St., Pekin, archts. CD 10/24.

▲ **Ill., Skokie**—APARTMENT—Bids Asked—Co-operative Home Builders Inc., 228 N. La Salle St., Chicago, Zone 1, 50 apartment bldgs. incl. 100 units, $900,-000; Rosen & Horowitz, 53 W. Jackson St., Chicago, Zone 4, archts.; 100 residences, $1,000,000. A. J. Del Bianco, 5501 W. Irving Park Ave., Chicago, Zone 51, archts.

### HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **OHIO**—State Hy. Dpt., T. J. Kauer, dir., Columbus, Zone 15,
**V. N. Holderman & Sons**, 890 Oakland Park Ave., Columbus, O. CA **$997,000**, est. $1,007,007, imprv. 6 mi. U.S. Rte. 40, Muskingum and Guernsey Counties;
**Rhoten Constr. Co.**, 16 E. Broad St., Columbus, O. CA **$429,694**, est. $460,700, S.R. 97 paving 2 sects., incl. 2 mi. in Bellville, Jefferson Twp., 7/10 of mile in Huntington Twp., Richland Co.;
**Twin Constr. Co.**, Chillicothe, O. CA Approx. **$66,520**. imprv. 0.357 mi. U.S. 52 in Nile and Washington Twps. through constr. drainage facilities, Scioto Co. Grand total approx. $1,493,214. Bids Dec. 18. CD 12/10.

▲ **Square Constr. Co.**, 2383 N. Park St. and **A. Marra Constr Co.**, 2063 E. 4 St., both Cleveland, O., CA, **$1,372,404**, est. $1,404,507. first section rein.-con. and rein.-con. pipe main sewer 34 St., Fall Creek to Temple Ave., INDIANAPOLIS, IND. Bd. P. Wks., E. A. Gardner, chn., City Hall, Indianapolis, Ind. Bids Dec. 24, awarded Dec. 31. CD 1/3, under LB.

### BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Sever-Williams Co.**, Washington C. H., O. CA **$1,213,000**. general contract Vocational SCHOOL,
(Continued on page 99)

# 3-Minute Quiz . . .

## ——For Construction men having problems with concrete ceiling or floor construction——

**1** Have you ever seen a housing project with *exposed flat concrete ceilings* which were ground, patched, rubbed, spackled, sealed and painted that resembled a three coat plaster job?

☐ *Yes* ☐ *No*

**2** Have you ever seen or heard of a *"Flat Slab"* or *"Beam and Slab"* concrete floor that was less than ten inches thick that would accommodate the plumbing, heating, air-conditioning and electrical trades?

☐ *Yes* ☐ *No*

**3** Have you ever known of a precast joist or precast slab floor that was as flexible in design or installation or as low in cost as a monolithically poured concrete joist floor construction system?

☐ *Yes* ☐ *No*

**4** Have you ever seen or heard of a skin-coat of plaster on concrete flat ceilings that lasted ten years?

☐ *Yes* ☐ *No*

**5** Do you know of any floor construction that takes less concrete and less steel than *concrete joist floor construction*?

☐ *Yes* ☐ *No*

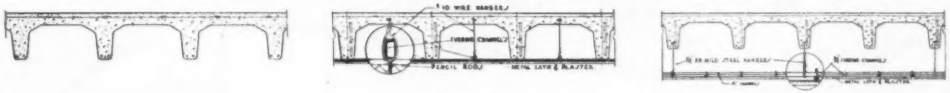
**6** Do you know of any type of floor construction that has a higher fire-resistant rating than *concrete joist floor construction*?

☐ *Yes* ☐ *No*

**7** Do you know of any other type floor construction that is so standardized and so universally accepted as *concrete joist floor construction* that the U. S. Department of Commerce Bureau of Standards has published a simplified practice for concrete form sizes?

☐ *Yes* ☐ *No*

## CONCRETE JOIST FLOOR CONSTRUCTION



**EXPOSED CEILING** **FURRED CEILING** **SUSPENDED CEILING**

Concrete Joist Floor Construction usually costs less than $1.00 per square foot for exposed and less than $1.40 per square foot with 3 coat plaster ceiling including painting. (Exclusive of beams and columns)

GATEWAY can recommend over 100 reliable firms to give you complete information on this time-proven fire-safe floor system.

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*Complete stock of forms in many locations*

# CUT DIGGING COSTS

## with the new Sherman Power Digger

WRITE FOR LITERATURE TODAY!

Patented, actuated bucket gives you selective digging action, better loading, greater versatility.

All-hydraulic action—made possible by heavy-duty hydraulic cylinders—assures efficient performance.

**SPECIFICATIONS**

| | |
|---|---|
| Shovel reach below ground surface | 8 feet |
| Digger reach behind tractor | 10 feet |
| Swinging arc | 140° |
| Trench width, standard digging shovel, single cut | 18 inches |
| Digging shovel capacity | 3.5 cu. feet |
| Loading shovel capacity | 5 cu. feet |
| Loading clearance, digging shovel, loaded | 7 feet |
| Loading clearance, loading shovel | 10 feet |

*Standard tractor mounting gives unmatched maneuverability and transportability.*

•

*Digs ditches, trenches, footings, culverts, basements and other excavations.*

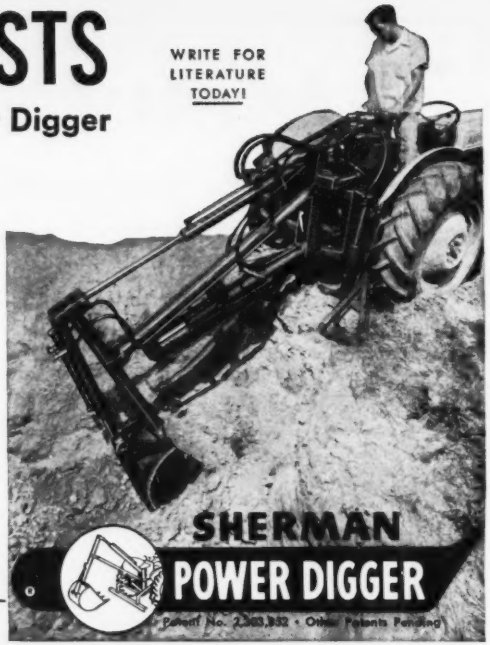
*Works well behind the tractor at any angle.*

•

*Actuated bucket raises high enough to load standard dump truck.*

•

*Handles roots, rocks, hard clay and oiled road surfaces.*

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# *HERE'S AN OIL BURNING SALAMANDER that's really* SMOKELESS!

## . . . even at a high burning rate

When you buy a salamander you want heat . . . not smoke! Ordinary bowl-type salamanders may be smokeless at low and medium burning rates, and may continue to be smokeless at these burning rates if cleaned often enough. The HY-LO Salamander is not only the cleanest burning heater at *both* low and high burning rates, but *continues* this same smokeless burning with far less attention. This definitely superior performance of the HY-LO Salamander is accomplished by the use of the patented return gas stack principle. This return gas stack returns consumed gases to the bowl, resulting in better combustion and elimination of carbon. Salamanders are purchased for use during low and extremely low temperatures and maximum heat out-put is, therefore, essential.

Insist on clean-burning HY-LOs . . . they cost no more than ordinary salamanders.

*Distributors in all principal cities.*
*Wire collect for name of your nearest distributor.*

**OUTSTANDING HY-LO FEATURES FOR SAFETY AND EFFICIENCY**

- Patented Return Gas Stack
- Extinguishing Damper
- Handy Carrying Clamp-Handles

**HY-LO** OIL BURNING SALAMANDER

**SCHEU PRODUCTS COMPANY**
274 STOWELL STREET
UPLAND, CALIFORNIA

PATENT NO. 2264157

*Height—62¾"*
•
*Diameter of bowl—19"*

(Continued from page 96)

E. First and N. St. Clair Sts., DAYTON, O. Bd. Educ., C. L. Borghardt, clk., 232 N. Main St., Dayton, O. Bids Dec. 19, awarded Dec. 21. CD 11/28.

**Sollitt Constr. Co.**, 301 Columbia St., South Bend, Ind., CA, **$800,000**, 1 story, 90,000 sq. ft. FACTORY with 2 story OFFICE, MICHIGAN CITY, IND. Joy Mfg. Co., Michigan City, Ind. Sverdrup & Parcel, 915 Olive St., St. Louis, Mo., engrs. Awarded Dec. 28.

▲ **Edward Rose Co.**, 14900 Linwood St., Detroit, Mich. Owner Builds. **$2,000,000**. 250 frame HOMES, Magnolia and Woodland Sts., INKSTER, MICH.

▲ **Turner Constr. Co.**, 420 Lexington Ave., New York, N. Y., **Western-Knapp Engineering Co., Inc.**, 50 Church St., New York, N. Y. and **Warren Howes**, Hibbing, Minn. CA **$30,000,000**. POWER PLANT and MINING DEVELOPMENT, incl. buildings, clearing, grading, copper ore mining facilities with cable hauling sys., water and sewer facilities, ONTONAGON, MICH. Copper Range Mining Co., Houghton, Mich. CD 12/4, under Mich., White Pine.

▲ **Spence Brothers**, 417 McCoskry St., Saginaw, Mich. CA **$2,617,500**. general contract, high SCHOOL, east side;

**Otto Carlson**, 2303 Hess St., Saginaw, Mich., CA $564,082. heating and plumbing contract for above school, SAGINAW, MICH. Bd. Educ., 544 Millard St., Saginaw, Mich. CD 1/3, under LB.

▲ **Perry McGlone Constr. Co.**, 1805 Grand St., Kansas City, Mo. LB **$1,093,121**, pavement;

**Sherwood Constr. Co., Inc.**, 619 N. Santa Fe, Wichita, Kan., LB **$365,100**, earthwork;

**Martin K. Eby Constr. Co., Inc.**, 610 N. Main St., Wichita, Kan. LB **$243,233**. drainage and sewers at airport, WICHITA, KAN. City Comrs., Emory L. Cox, dir., City Hall, Wichita, Kan. Ediger Engineering Co., 252 Laura St., Wichita, Kan., engr. Bids Dec. 19. CD 10/4.

▲ **Koss Constr. Co.**, 205 Farm Bureau Bldg., Des Moines, Ia. CA **$1,128,292**. pavement first runway and parking strips at airport, WICHITA, KAN. Bd. Park Comrs., City Hall, Wichita, Kan. Bids Dec. 19, awarded Dec. 20. CD 1/3, under LB.

▲† **T. C. Bateson Constr. Co.**, Irwin-Keasler Bldg., Dallas, Tex. CA **$1,211,700**. design, fabrication, erection of maintenance and operations facilities, Eng. 34-066-52-19, WICHITA FALLS, TEX. U. S. Eng., Box 61, Tulsa 2, Okla. Bids Nov. 20, Awarded Dec. 27 CD 11/27, under LB.

† **J. W. Bateson Constr. Co.**, 1102 Irwin-Keasler Bldg., Dallas, Tex., CA. **$607,115**, technical training hangars, Inv. No. ENG 34-066-51-44, WICHITA FALLS, TEX. U. S. Eng., Box 61, Tulsa, Okla., Bids June 21. CD 7/2, under LB.

## BUILDINGS

### LOW BIDS AND CONTRACTS

**Priester Constr. Co.**, Davenport Bank Bldg., Davenport, Ia., CA **$931,000**, COOLER and RAMP BLDG., DAVENPORT, IA. Oscar Mayer Packing Co., 13337 W. 2 St., Davenport, Ia.

▲ **Collins Constr. Co.**, 3160 Fairfax Trafficway, Kansas City, Kan. CA **$1,500,000**. WAREHOUSE, incl. OFFICES, RFD from KANSAS CITY, MO. John Deere Plow Co., 13 and Hickery St., Kansas City, Mo. CD 12/26.

▲ **Emery Constr. Co.**, 1844 Burnett Rd., Topeka, Kan. Owner Builds. **$1,500,000**. 150 HOUSES, TOPEKA, KAN.

**W. R. Grimshaw**, Philtower Bldg., Tulsa, Okla., CA. Approx. **$700,000**. enlarging TIRE PLANT, MIAMI, OKLA. B. F. Goodrich Co., 500 S. Main St., Akron, O. J. R. Koberling, Court Arcade, Tulsa, Okla., archt. CD 7/12.

▲ **Brown & Root, Inc.**, Box 3, Houston, Tex., Own Forces. **$500,000**. SHOP expansion. (Army Tank rebuilding); **$2,000,000**, retooling job;

**Purchase and Hire, $329,933**, some supplemental work for construction Army Tank Rebuilding Proj., HOUSTON, TEX. CD 8/14.

**Phillips Chemical Co.**, Goldsmith, Tex., Own Forces. Approx. **$875,000**. Sulphur Production PLANT unit, 100 tons daily capacity, GOLDSMITH, TEX. CD 6/13.

## WEST OF MISSISSIPPI

### BIDS ASKED—HEAVY CONSTRUCTION
### STATE HIGHWAY LETTINGS
### BRIDGES
January 18 Kansas
### STREETS AND ROADS
January 17, 18 Kansas  January 18 Minnesota

### BIDS ASKED—BUILDINGS

▲† **Tex., Mineral Wells**—HEADQUARTERS—B.A. 1/18—U. S. Eng., 1127 T & P Bldg., Fort Worth, 90,000 sq. ft. group headquarters and battalion headquarters bldg., Wolters Air Force Base, $1,500,000. Extended date. CD 8/28.

† **N. M., Albuquerque**—BASE HEADQUARTERS—B.A. 1/22—U. S. Eng., Box 1538, 2 story, bsmnt., etc. addns. to base headquarters bldg.; Sandia Base; Serial No. 29-005-52-19. Approx. $300,000. Plans deposit $100.

▲† **Tex., Texarkana**—WAREHOUSES—B.A. 1/22—U. S. Eng., Box 61, Tulsa, 2, Okla., 2 warehouses and necessary facilities, Eng. 34-066-52-17, $2,750,000. Extended date. CD 12/12.

▲ † **Okla., McAlester**—MAGAZINES and WAREHOUSES, etc.—B.A. 1/25—Dpt. Navy, 600 South St., New Orleans, La., magazines, warehouses, railroads, roads, water and sewers. $8,000,000. Benham Eng. Co., American Natl. Bldg., Oklahoma City, engr.

**Tex., Brady**—PLANT—Bids Asked—International Manufacturing Co., Garland, Tex., assembly plant, $500,000. CD 11/5.

▲ **Tex., Port Arthur**—PLANTS—Bids Asked—Gulf Oil Corp., Port Arthur, sulphuric acid plant unit, $789,000, CD 12/27; acid sludge decomposition plant, $1,529,855. CD 11/15.

▲ **Tex., Waco**—HOUSING—Bids Asked—U. S. Eng., 606 Santa Fe Bldg., Galveston, construct, manage and finance 500 rental housing units. $3,500,000. CD 11/26.

### HEAVY CONSTRUCTION

### LOW BIDS AND CONTRACTS

▲ **IOWA**—State Hy. Comn., Ames,

**Bill Curphy Co.**, 447 Ins. Exchange Bldg., Des Moines, Ia., LB, **$97,823**, paving 0.327 mi. F-479, Mills Co.;

**Hallett Constr. Co.**, Crosby, Minn., LB, **$387,023** paving 1.863 mi. U-917 (2), Story Co.;

**Gus Ostermann & Sons**, Ocheyedan, Ia., LB, **$133,276**, grading 15.701 mi. F-351 (5), Humboldt, Wright, Hancock and Kossuth Counties;

**R. B. Burch, Inc.**, 509½ 3 Ave. S.E., Cedar Rapids, Ia., LB, **$538,288**, grading 15.264 mi F-887 (2), Linn Co.;

**J. D. Armstrong Co., Inc.**, Ames, Ia., LB, **$460,733**, grading 11.624 mi. F-988 (1), Marshall and Tama Counties. Bids Dec. 27. CD 12/11.

**Three Rivers Electric Co-operative**, Linn, Mo. Own Forces. **$535,000**. 81 mi. rural distr. lines, 29 mi. new tie lines, headquarters facilities, Osage Co.,

▲† **Northern Improvement Co.**, 633 1st Ave. N., Fargo, N. D. and **Northwestern Eng. Co.**, Rapid City, S. D., CA. **$738,000**, Item 1, 246,000 tons Type A rock;

**L. G. Everist, Inc.**, 302 Paulton Bldg., Sioux Falls, S. D. CA. **$151,800**, Item 2, 115,000 tons Type A rock;

**Hector Constr. Co.**, Woodworth, N. D. CA. $163,900, Item 3, 110,000 tons Type C rock;

**J. L. Shiely Co.**, 1101 Snelling Ave. N., St. Paul 4, Minn. CA. **$184,920**, Item 4, 138,000 tons of Spalls;

**J. Leo Corrigan Co.**, Mandan, N. D., CA. **$118,400**, Item 5, 32,000 tons Type B rock, for Garrison Dam and Reservoir, Proj. Inv. 20, NORTH DAKOTA. Grand total $1,357,020. U. S. Eng., Fort Lincoln, P. O. Box 300, Bismarck, N. D. Bids Nov. 15. CD 11/29, under LB.

▲† **Peter Kiewit & Sons**, Airport Branch P.O., Wichita, Kan. LB **$2,049,857**, est. $2,269,592, concrete parking apron;

**S. J. Groves & Sons Co.**, 510 Wesley Temple Bldg., Minneapolis, Minn. LB **$2,048,958**, est. $2,171,702, asphalt parking apron, Smoky Hill Air Force Base, near SALINA, KAN. U. S. Eng., 601 Davison Bldg., Kansas City 8, Mo. Bids Dec. 27. CD 12/11.

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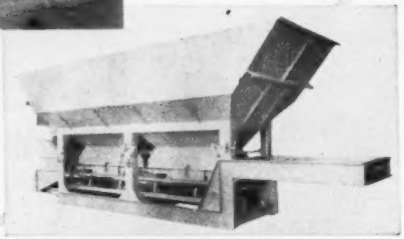

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▲ **Gulf Oil Co.**, Port Arthur, Tex., Purchase and Hire. Approx. $1,450,000. facilities for manufacture of iso-octyl alcohol PLANT, PORT ARTHUR, TEX. CD 2/13/51.

▲ **Lummus Co.**, M. Esperson Bldg., Houston, Tex. CA $2,225,000. 1,000 bbl. REFINERY for producing reduced crude in continuous cooking contact method, SUNRAY, TEX. Sharock Oil & Gas Corp., M. Esperson Bldg., Houston, Tex. CD 12/20.

▲† **Robert E. McKee, General Contractor, Inc.**, Box 1706, Santa Fe, N. M., CA. $2,078,700, 2 story, full bsmnt., approx. 5,800 sq. ft. MEDICAL RESEARCH LABORATORY, outside utilities, parking area and sidewalks, Inv. 291-52-7, LOS ALAMOS, N. M. U. S. Atomic Energy Comn., Los Alamos, N. M. Bids Nov. 20. CD 11/26, under LB.

## FAR WEST

### BIDS ASKED—HEAVY CONSTRUCTION

▲† **Calif., Los Angeles**—TRANSIT SHED FACILITIES—B.A. 1/23—Los Angeles Harbor Dpt., City Hall, transit shed facilities, at Berth 196-197, Wilmington. $3,000,000. Plans deposit $25. E. C. Earl, harbor engr. CD 11/9/45.

### BIDS ASKED—BUILDINGS

**Calif., Whittier**—SCHOOL—B.A. 1/23—Whittier Union High School Dist., El Rancho High School, $900,000. Extended date. Wm. H. Harrison, 816 W. 5 St., Los Angeles, archt. CD 12/21.

▲† **Calif., San Francisco** — HOSPITAL — B.A. About 5/15—Veterans Admin., Munitions Bldg., Wash., D. C., 1,000 bed neuro-psychiatric hospital, at Fort Funston in San Francisco. $21,000,000. CD 11/11/46.

### HEAVY CONSTRUCTION

#### LOW BIDS AND CONTRACTS

▲ † **Columbia Steel Co.**, 2345 N. W. Nicolai St., Portland, Ore., LB $591,800;

**Inland Steel Co.**, 38 S. Dearborn St., Chicago, Ill., LB $591,800, steel piling for The Dalles Dam, CIVENG 35-026-52-127, OREGON. U. S. Eng., Pittock Block, Portland, Ore.

† **L. H. Hoffman**, 715 S. W. Columbia Blvd., Portland, Ore., CA, $810,000, outside utilities, waste disposal facilities, paving, etc. for Hanford Works Laboratory, RICHLAND, WASH. General Electric Co., Richland, prime contractor to Atomic Energy Comn. for operation Hanford Works, Richland, Wash. Bids Nov. 7. CD 11/15, under LB.

**M. Malaspina**, 1901 23 Ave. S., Seattle, Wash., CA $599,191. 93,300 ft. 6- to 15-in. sewers, Contr., 3, SEATTLE, WASH. Lake City Sewer Dist., 3622 E. 105 St. Seattle, Wash. Bids Oct. 30. CD 11/8, under LB.

**Arcorace & Co.**, 7722 Rainier Ave., Seattle, Wash., CA, $732,540, Contr. 2, of L. I. D. 1, SEATTLE, WASH., Lake City Sewer Dist. 3622 E. 105 St., Seattle, Wash. Bids Nov. 14. CD 11/21, under LB.

▲ **OREGON**—State Hy. Comn., Highway Bldg., Salem, **Leonard & Slate**, 7805 S.W. 40 St., Portland, Ore., LB $1,530,464. grading, paving 5.6 mi. Divide-Anlauf unit, Pacific Hy. FAP BFI-189 (9), Douglas and Lane Counties. Bids Dec. 20. CD 12/11.

**OREGON**—State Hy. Comn., Highway Bldg., Salem, Ore., **Porter W. Yett**, 6500 N. E. Ainsworth St., Portland, Ore., LB $507,900. paving 31.6 mi. Sunset Hy., Washington and Clatsop Counties. Bids Dec. 21. CD 12/11.

▲ **OREGON**—State Hy. Comn., Highway Bldg., Salem, **Warren Northwest**, 8607 N.E. Columbia Blvd., Portland, Ore., CA. $215,434, grading, paving 4.33 mi. The Dalles-California Hy., FAP F-120 (3), Klamath Co.; **Carl M. Halvorson**, Builders Exchange Bldg., Portland, Ore., CA. $229,594. grading 0.29 mi., paving 0.34 mi., Wilson River Hy. FAP F-191 (12), Tillamook Co.; **Pacific Sand & Gravel Co.**, Centralia, Wash., CA. $848,677, grading 3.39 mi., paving 24.27 mi. Old Oregon Trail Hy. FAP FI-139 (6) and FI-321 (5), Union and Baker Counties; **J. C. Compton Co.**, McMinnville, Ore., CA $182,353. grading, paving 2.3 mi. Salmon River Hy. FAP F-300 (6), Yamhill Co. Grand total $1,476,058. Bids Dec. 20. CD 12/11.

▲ **CALIFORNIA**—State Div. Hys., P. Wks. Bldg., Sacramento,
**Fredrickson & Watson Constr. Co.** and **M & K Corp.**, 873 81 Ave., Oakland, Calif., CA, $1,260,449, grading, road work, grade separation structures, etc. 1.8 mi. Easthore Freeway near Trimble Road, Santa Clara Co. Bids Dec. 5, awarded Dec. 24. CD 12/13, under LB.

**CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles,
**R. M. Price Co.**, 2285 Pinecrest St., Altadena, Calif, LB, $508,656, 2 rein.-con. bridges, etc. across Compton Creek on Los Angeles River Freeway across Del Amo Blvd. and across Compton Creek, Los Angeles Co. Bids Dec. 20. CD 11/27.

### BUILDINGS

#### LOW BIDS AND CONTRACTS

**Leo S. Wynans**, 3201 N. E. Broadway. Portland, Ore., CA. $602,103, 26-room Grobert Gray Grade SCHOOL, PORTLAND, ORE., School Dist. 1, 631 N. E. Clackamas St., Portland, Ore. Bids Dec. 12. CD 11/20.

▲ **Cannon Constr. Co.**, 959 South 7 W, Salt Lake City, Utah CA. Approx. $1,000,000. 26,000 sq. ft., terra cotta, terrazzo DEPARTMENT STORE, air conditioning, in outlying Sugarhouse Dist., at 21st south and 11th East Sts., SALT LAKE CITY, UTAH. Keith-O'Brien, Inc., 56 E. Broadway, Salt Lake City, Utah. Clifford

Evans, Zions Savings Bank Bldg., Salt Lake City, Utah, archt.

**The Pacific Co.**, 801 Cedar St., Berkeley, Calif., CA, **$726,690**, Pleasant Hills Intermediate SCHOOL, CONCORD, CALIF. Mt. Diablo Unified School Dist, High School Bldg., Concord, Calif. Bids Dec. 18, awarded Dec. 21. CD 12/31 under LB.

▲ **Otis Oliver**, 1827 W. 145 St., Gardena, Calif., LB, **$543,798**, est. $398,000, El Rincon SCHOOL;

**Johnson & Vedder**, 3419 Hyde Park Blvd., Los Angeles, Calif., LB, **$614,970**, est. $534,000, Airport SCHOOL CULVER CITY, CALIF. Culver City Unified School Dist., 4034 Irving Pl., Culver City, Calif. Bids Dec. 21. CD 12/4.

▲ † **William P. Neil Ltd.**, 4814 Loma Vista Ave., Vernon, Calif., LB, **$7,947,940**, Schedule A various WAREHOUSES, utilities shop bldgs., etc. at Sharpe General Depot, Tracy Annex, Spec. 1606, LATHROP, CALIF. U.S. Eng., Wright Bldg., Sacramento, Calif. Bids Dec. 20. CD 12/3.

**Willis & Willis**, 5250 Blackstone St., Fresno, Calif., LB, **$989,946**, 75 duplex HOUSING, etc., Calif. 26-3, MODESTO, CALIF. Housing Auth., Stanislaus Co., 1012 16 St., Modesto, Calif. Bids Dec. 20. CD 13/3.

**O. L. Carpenter**, 1102 Morena Blvd., San Diego, Calif., CA, **$521,869**, Mar Vista High SCHOOL addns., NATIONAL CITY, CALIF. Sweetwater Union High School Dist., 2800 Highland Ave, National City, Calif. Bids Nov. 27. CD 12/4, under LB.

**Swinerton & Walberg**, 225 Bush St., San Francisco, Calif., LB, **$511,000**, NON-PROCESS BLDGS., MAGAZINE, etc., NIMBUS, CALIF. Aerojet Corp. Administration Bldg., Nimbus, Calif. Bids Dec. 17. CD 12/13.

▲ **Pacific Coast Builders**, 2530 18 St. San Francisco, Calif., LB, **$1,018,750**, Las Palmas Junior High SCHOOL, NORTH SACRAMENTO, CALIF. Grant Union High School Dist., North Sacramento, Calif. Bids Dec. 19. CD 11/27.

▲ † **MacDonald, Young & Nelson**, and **Morrison-Knudsen Co.**, 351 California St., San Francisco, Calif., CA **$3,784,790**, Schedule A, 3 general purpose WAREHOUSES at Sacramento Signal Depot, SACRAMENTO, CALIF. U. S. Eng., Wright Bldg., Sacramento, Calif. Bids Nov. 20, awarded Dec. 20. CD 12/3, under LB.

**M. H. Golden Constr. Co.**, 3485 Noell St., San Diego, Calif., CA, **$675,637**, new OFFICE for Highway Dist. XI, SAN DIEGO, CALIF. State Div. Architecture, P. Wks. Bldg., Sacramento, Calif. Bids Dec. 18, awarded Dec. 26. CD 12/31, under LB.

**H. G. Larson**, 9302 California Ave., South Gate, Calif., LB, **$572,242**, est. $300,000, Lakeside SCHOOL, SANTA FE SPRINGS, CALIF. Little Lake School Dist. 11962 E. Florence Ave., Santa Fe Springs, Calif. Bids Dec. 20. CD 12/11.

## CANADA

### HEAVY CONSTRUCTION

#### LOW BIDS AND CONTRACTS

**Commonwealth Constr. Co. Ltd.**, 700 Taylor St., Vancouver, B. C., CA, **$659,535**, rein.-con. inland magazine establishment, KAMLOOPS, B. C. Defence Constr. (1951) Ltd., 360 Homer St., Vancouver, B. C. Bids Nov. 27, awarded Dec. 24. CD 11/13.

### BUILDINGS

#### LOW BIDS AND CONTRACTS

▲ **Commonwealth Constr. Co. Ltd.**, 700 Taylor St., Vancouver, B. C., CA, **$1,763,708**, rein.-con. BARRACK BLOCK at HMCS, Naden, ESQUIMALT, B. C. Defence Construction (1951) Ltd., 360 Homer St., Vancouver, B. C. Awarded Dec. 24. CD 10/5.

▲ **Carter Constr. Co. Ltd.**, 41 Cherry St., Toronto, Ont., CA, Approx. **$5,000,000**, 142,000 sq. ft., 2 story, brick, steel PLANT Addn., NEW TORONTO, ONT. Goodyear Tire & Rubber Co. of Canada Ltd., New Toronto, Ont. Awarded Dec. 20. CD 12/18, under CA.

## LATIN AMERICA

### HEAVY CONSTRUCTION

#### LOW BIDS AND CONTRACTS

**Petroleou Mexicanis (Pemex)**, Mexico City, Mexico. Own Forces. Approx. **$875,000**. 430,000 bbl. steel oil and products storage farm, SALINA CRUZ, MEXICO. CD 6/16/47.

### BUILDINGS

#### LOW BIDS AND CONTRACTS

▲ **Foster-Wheeler Corp.**, 165 Broadway, New York, N. Y., U.S.A. CA **$18,000,000** to **$25,000,000**. Catalytic Cracking PLANT, BARRANCABERMEJA, COLOMBIA. Empresa Colombiana de Petroleos, Govt. of Colombia, Bogota, Colombia. CD 7/24.

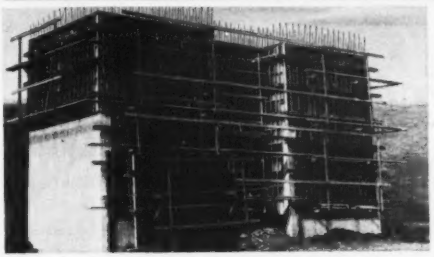
## AMERICANS ABROAD

### BUILDINGS

#### LOW BIDS AND CONTRACTS

▲ **Merritt-Chapman & Scott Corp.**, 17 Battery Pl., New York, 4, N. Y., **Raymond Concrete Pile Co.**, 140 Cedar St., New York, N. Y., and **Fletcher Constr. Co. Ltd.**, Auckland, New Zealand, CA, **$45,000,000**. bleached sulphate pulp and newsprint MILL, SAWMILL, docks, 165 mi. south of Auckland, TEPUKE, NEW ZEALAND. New Zealand Government, Auckland, New Zealand.

(Proposal Advertisements see pp. 102 & 103)

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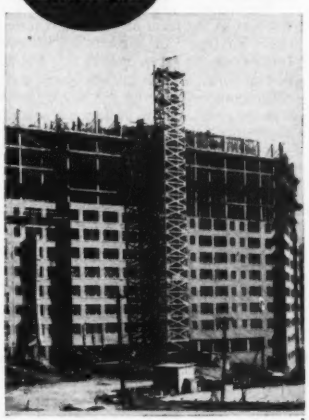

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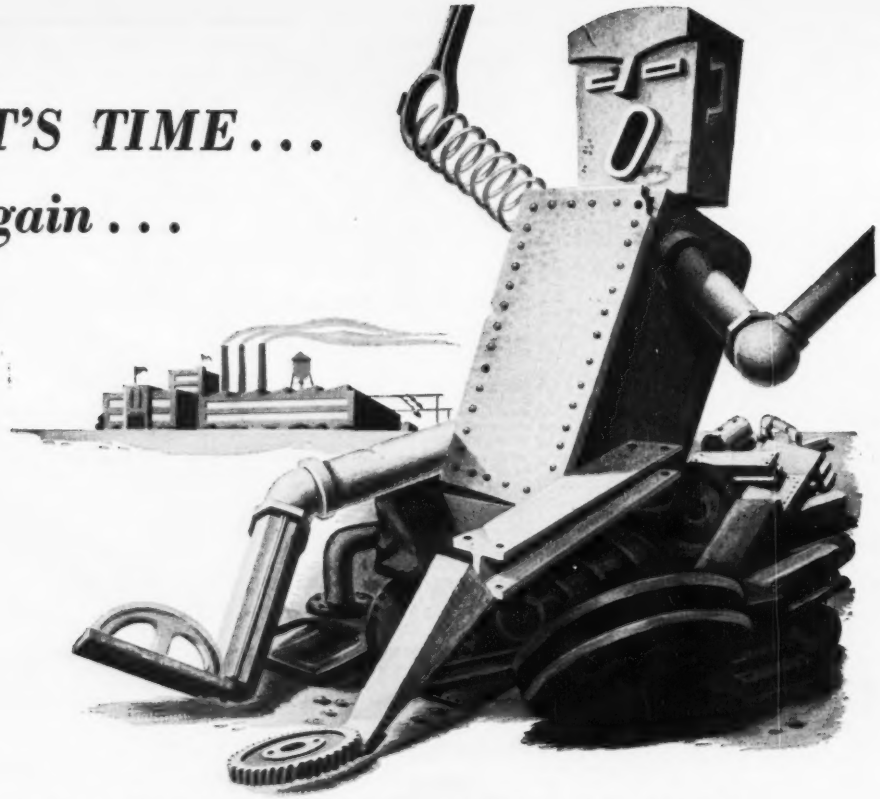

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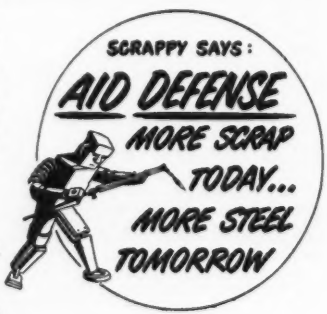
We *do* have the scrap. It's everywhere, not just in the form of *production* scrap—the "leavings" of machining, normally turned over to scrap dealers . . . but also in the form of *idle* metal: obsolete machines and tools, no-longer-usable jigs and fixtures, gears, chains, pulleys, valves, pipe, abandoned steel structures, etc.

We must have this *idle* metal to keep the furnaces running.

Please cooperate. Set up a Scrap Salvage Program in your plant—*now.* For a complete plan on "how to do it", write for booklet "Top Management: Your Program for Emergency Scrap Recovery". Address Advertising Council, 25 W. 45 Street, New York 19, N. Y.

**Why Do We Need *Scrap?***

Steel is made half from pig iron, half from scrap. With production on the increase, more scrap must be purchased. And it's up to you to "dig it out" and sell it.




**NON-FERROUS SCRAP IS NEEDED, TOO!**

***This advertisement is a contribution, in the national interest, by***

**McGRAW-HILL PUBLISHING COMPANY, INC.**

**330 WEST 42nd STREET** **NEW YORK 18, N. Y.**

A PUBLIC SERVICE PROJECT THE ADVERTISING COUNCIL

# OFFICIAL PROPOSALS

**RATE:** THE RATE FOR OFFICIAL PROPOSAL ADVERTISING IS $1.25 PER LINE (OR FRACTION) PER INSERTION.

**CLOSING DATE:** FRIDAY 10:30 A. M. FOR THE ISSUE DATED THE FOLLOWING THURSDAY.

**SEND COPY TO:** OFFICIAL PROPOSAL DIVISION, ENGINEERING NEWS-RECORD, 330 W. 42ND ST., NEW YORK 36, N. Y.

Bids: February 6, 1952

## Additions to Sewage Treatment Plant

Notice is hereby given that sealed bids or proposals for constructing additions to the existing sewage treatment works of the Borough of Conshohocken, Pennsylvania, will be received by the Borough of Conshohocken Authority at the Borough Hall, Conshohocken, Pennsylvania, up to 2:00 P.M. E.S.T. on the 6th day of February, 1952 at which time and place they will be publicly opened and read aloud. The work wil be divided into three (3) contracts, designated as follows:

Contract No. 2—Structural & Mechanical Work
Contract No. 3—Electrical Work
Contract No. 4—Heating Work

All bids should be addressed to the Borough of Conshohocken Authority, Borough Hall, Hector and Harry Streets, Conshohocken, Pennsylvania and shall be placed in a sealed envelope sufficiently labeled to indicate that it is a bid for this work. Copies of the plans, specifications and other contract documents are on file and open to public inspection and may be procured at the office of Albright & Friel Inc., Consulting Engineers, 121 South Broad Street, Philadelphia 7, Pennsylvania and at the Borough Hall in Conshohocken, Pennsylvania, and sets of documents may be obtained during any business hour at either the office of the said Consulting Engineers, or at the Borough Hall upon paying a deposit of $30.00 for each set of documents. If the documents are returned in good condition within five (5) days after the opening of bids, the full amount of the deposit for one set will be refunded to each actual bidder; and other deposits will be refunded with a deduction of $15.00 to defray the actual cost of reproduction of the sets of the documents. If the said documents are not returned within the time stated, the entire amount of deposit will be forfeited.

A bid bond or certified check made payable to the Borough of Conshohocken Authority in the amount of five (5%) percent of the bid must be deposited by each bidder with his bid as a guarantee that in case any contract is awarded to him, he will execute the contract and furnish the bonds required.

The Borough Authority hereby reserves the right, which is understood and agreed to by all bidders, to refuse and reject any or all bids submitted hereto, and, if the Authority deems it necessary, to readvertise for bids; and the said Authority also reserves the right to waive any informality in bids received, but any contract awarded will be to the lowest responsible bidder.

No bid may be withdrawn by the bidder for forty-five (45) days after the scheduled closing time for the receipt of bids.

The National Production Authority has assigned a DO-T-8 Rating and a T-8 Allotment to this project.

E. D. MONTROSS
SECRETARY OF THE AUTHORITY

Bids: February 1, 1952

## Additions to Sewage Treatment Works

Notice is hereby given that sealed bids or proposals for constructing additions to the existing sewage treatment works of the City of York, located on Codorous Creek, north of York, Pa., will be received by the York City Sewer Authority at the City Hall, York, Pa., up to 2:00 P.M. o'clock, E.S.T. on the 1st day of February, 1952 at which time they will be publicly opened and read aloud in the City Hall. The work will be divided into four (4) contracts, as designated as follows:

Contract No. 1—Structural & Mechanical Work
Contract No. 2—Plumbing Work
Contract No. 3—Electrical Work
Contract No. 4—Heating Work

All bids should be addressed to the York City Sewer Authority, City Hall, York Pa., and shall be placed in a sealed envelope sufficiently labeled to indicate that it is a bid for this work, copies of the plans, specifications and other contract documents are on file and open to public inspection and may be procured at the office of Albright & Friel, Inc., Consulting Engineers, 121 South Broad Street, Philadelphia 7, Pennsylvania, and at the office of the City Engineer, City Hall, York, Pa. after Jan. 2, 1952 and sets of the documents may be obtained during any business hour at either the offices of the said Consulting Engineers, or the office of the City Engineer upon paying a deposit of $60.00 for each set of documents. If the documents are returned in good condition within five (5) days after the opening of bids, the full amount of the deposit for one set will be refunded to each actual bidder; and other deposits will be refunded with a deduction of $30.00 to defray the actual cost of reproduction of the sets of the documents. If the said documents are not returned within the time stated, the entire amount of deposit will be forfeited.

A bid bond or certified check made payable to the York City Sewer Authority in the amount of five (5%) percent of the bid must be deposited by each bidder with his bid as a guarantee that in case any contract is awarded to him, he will execute the contract and furnish the bonds required.

The York City Sewer Auth. hereby reserves the right, which is understood and agreed to by all bidders, to refuse and reject any or all bids submitted hereto, and, if the Authority deems it necessary, to readvertise for bids; the said Authority also reserves the right to waive any informality in bids received, but any contract awarded will be to the lowest responsible bidder.

No bid may be withdrawn by the bidder for forty-five (45) days after the scheduled closing time for receipt of bids.

The National Production Authority has assigned a DO-T-8 Rating and a T-8 Allotment to this project.

SAMUEL W. HARBOLD
SECRETARY OF THE AUTHORITY
Date December 20, 1951

Bids: February 7, 1952

## Water Treatment Plant

Sealed bids for constructing a thirty-six mgd water treatment plant and pumping station for Additional Water Supply from Lake Ontario for the City of Rochester, N. Y. will be received by the City Purchasing Agent at his office, Room 36, City Hall, No. 20 South Fitzhugh Street, Rochester 14, N. Y. until 11 o'clock A.M., Eastern Standard Time on February 7, 1952 at which place and time they will be publicly opened and read aloud.

Plans, Bidding Sheets, Specifications and Contract may be examined at the office of the Purchasing Agent, and copies obtained upon payment of $25.00 per set, which money will be refunded, providing the plans and specifications are returned in good condition within ten days after the opening of the bids.

All bids shall be made on the form provided in the Contract documents and shall be accompanied by a certified check, payable to the City of Rochester, N. Y. for an amount equal to five per cent (5%) of the total amount of the bid, as a guarantee that the bidder will execute the Contract within Ten (10) days after being notified that his bid has been accepted.

Nearly all the structural steel required for this project is now being fabricated under a separate contract.

Allocations of most of the critical materials for the project have been made by the Federal Government.

The Purchasing Agent reserves the right to reject any or all bids.

Dated, Jan. 9, 1952

FRED W. ERETH
Purchasing Agent

Bids: January 28, 1952

## Paving Extension of North Avenue

THE PORT OF NEW YORK AUTHORITY
NEWARK AIRPORT
CONTRACT NA-160.002

Sealed proposals for paving extension of North Avenue at Newark Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, until 11:00 A.M. Monday, Jan. 28, 1952, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $10 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, January 10, 1952

### U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-3621) will be received by the Bureau of Reclamation, Denver, Colorado, until January 31, 1952, and then publicly opened for furnishing one variable diameter penstock for Eklutna Power Plant, Eklutna Project, Alaska. Delivery is desired within 260 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver, Colorado.

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3629) will be received by Bureau of Reclamation, Ephrata, Washington until February 7, 1952, and then publicly opened for furnishing labor and materials and performing all work for the construction of Lake Lenore Pumping Plants Nos. 1 and 2 and intake and connecting channels, Columbia Basin Project, Washington. The work is situated 2 to 4 miles north of Soap Lake, Washington. Principal items are approximately: 48,000 cu. yds. excavation; 210 cu. yds. concrete; 1,200 lin. ft. concrete pipe; 32,000 lbs. discharge lines and metalwork; install 8 pumps and electrical equipment; and other work. Time allowed for completion will be 220 days. For particulars, address Bureau of Reclamation, Ephrata, Washington; or Building 53, Denver Federal Center, Denver, Colorado.

UNITED STATES DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION. NOTICE IS HEREBY GIVEN that sealed bids on specifications No. 763C-230 for furnishing labor and materials and performing all work for streets and sidewalks, and drainage, sewerage, and water-distribution systems for Alcova Dam Government Community, Kendrick Project, Wyoming, will be mailed to P. O. Box 280, Casper, Wyoming or delivered to the office of the Bureau of Reclamation in time for the public opening at 10:30 a.m., Mountain Standard Time, January 24, 1952, at the office of the Bureau of Reclamation, Reclamation Center, Casper, Wyoming.

Copies of the standard forms and of the specifications may be obtained from the following offices of the Bureau of Reclamation: Avery A. Batson, Regional Director, Building No. 46, Denver Federal Center, Denver, Colorado; and I. J. Matthews, District Manager, P. O. Box 280, Casper, Wyoming. No charge for copies of the specifications and drawings furnished for bidding purposes; for all others $2.00 per copy, not returnable. Payments should be made by check or money order payable to the Treasurer of the United States.

# SEARCHLIGHT SECTION

## EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

**UNDISPLAYED RATE:**
*(Not available for equipment advertising)*
$1.50 cents a line, minimum 3 lines. To figure advance payment count 5 average words as a line.
POSITION WANTED & INDIVIDUAL SELLING OPPORTUNITY undisplayed advertising rate is one-half of above rate, payable in advance.
PROPOSALS, $1.25 a line an insertion.

**INFORMATION.**
BOX NUMBERS count as 1 line additional in undisplayed ads.
DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).
EQUIPMENT WANTED or FOR SALE Advertisements acceptable only in Displayed Style.

**DISPLAYED—RATE PER INCH:**
The advertising rate is $14.25 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.
AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches —to a page. E.N.R.

*NEW ADVERTISEMENTS received by January 14th at the New York City Office, 330 W. 42 St., N. Y. 36, will appear in January 24th issue subject to space available*

# DESIGNERS

We need men with experience as:

**Structural Designers**
**Concrete Designers**
**Electrical Designers**
**Piping Designers**
**Checkers**

Men should have experience in Blast Furnaces, Steel Mill, Oil Refinery or other Heavy Structural Design.

Positions available in our offices at Cleveland, Ohio and Union, New Jersey.

We pay among highest rates plus annual profit-sharing bonus.

Our continuous expansion and growth offers many fine future opportunities.

*WRITE.*

**ARTHUR G. McKEE & Co.**
2300 Chester Ave., Cleveland 1, Ohio

# SALES ENGINEER

For employment with a large mid-western plant specializing in the fabrication of steel, steel alloys, and aluminum products in connection with process plants and other equipment for the gas, petroleum and chemical industries. Must be capable of assisting in the administration of sales activities involving promotional sales work, customer contacts, selling, preparation of production orders and general coordination of distribution policies with sales manager. Man with chemical engineering background preferred between the age of 35/45 who has customer contacts in the fabricating and processing field and who has the sales qualifications for dealing with people and coordinating the efforts of a sales organization. This position offers possible advancement to general sales manager.

*Write giving background, personal data, and salary requirement—*

**SW-2939**, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

*REPLIES (Box No.): Address to office nearest you*
*NEW YORK: 330 W. 42nd St. (36)*
*CHICAGO: 520 N. Michigan Ave. (11)*
*SAN FRANCISCO: 68 Post St. (4)*

## POSITIONS VACANT

ELECTRICAL ENGINEER—Position open in Eastern United States for young man with actual experience in distribution and electrical maintenance work. Take off and estimating experience helpful. Excellent opportunity for advancement. This position is permanent. Send experience record, education and reference with application. Salary open. P-2885, Engineering News-Record.

ENGINEER EXPERIENCED in general municipal work including construction of water and sewer lines, pavements, and drainage facilities, maintenance of streets, public grounds and buildings, to supervise operation of engineering and service departments of rapidly growing residential community in Metropolitan Cleveland. Good pay with opportunity for increase. Submit full resume, stating experience, education, age, availability and salary expected. P-2746, Engineering News-Record.

CONSTRUCTION EXECUTIVE. Must have good background as Project Manager and General Superintendent. Capable of coordinating and supervising operations for construction of large overseas bases. Submit complete resume with small photograph, and state age, education and salary expected. P-2933, Engineering News-Record.

ENGINEER, EXPERIENCED, first class, civil or mechanical, for either office or field work. Write P. O. Box 1106, Roanoke, Va.

ENGINEER SUPERVISOR—Wanted for home office of general construction company. Must be completely familiar with estimating, bidding and cost analysis on both heavy construction and building. Only applicants with proven, broad experience will be considered. Applicant must have had previous experience in the field as project manager or project superintendent. Salary open. Send complete resume. P-2884, Engineering News-Record.

ESTIMATOR—Ten years experience in public works for general contractor in N.Y.C. BR 9-8996 or write P-2918, Engineering News-Record.

(Continued on the opposite page)

## DISTRICT MANAGERS WANTED

Midwestern equipment manufacturer needs district managers for distributor and dealer contact and other field sales work in several territories. Full time traveling. Products are truck equipment, roadbuilding and excavating machinery. Applications are invited from qualified men with field sales experience in these lines.

SW-2671, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Illinois

WANTED FOR
CHEMICAL PLANT LOCATED IN SOUTH
## ESTIMATORS

Must be experienced engineers, under 45, familiar with Refinery and Chemical Plant design and capable of estimating process equipment installations from flow diagrams and specifications. Give full information, experience record and salary expected in first letter. All replies confidential.

P-2907, Engineering News-Record
520 No. Michigan Ave., Chicago 11, Ill.

## CIVIL ENGINEER

with a minimum of 3-5 years experience in the design of sanitary sewers. Must be thoroughly competent to take over the complete design of a sewer system for a population of 60,000 in all details. Work is located at Morrisville, Pennsylvania.

Phone Manhasset 7-0777
C. A. MONROE
1900 Northern Boulevard, Manhasset, N. Y.

# Structural Engineer

Minimum four years experience in steel or reinforced concrete problems.

**WE OFFER • • • • •**

- Attractive salary with considerable premium overtime.
- Excellent opportunity to assume additional responsibility.
- Liberal Employee Benefits.
- The security inherent in association with a company established over half a century.
- Convenience of working in downtown New York City near all local and commuting transportation facilities.

*Please write complete details preliminary to confidential interview*

**The M. W. KELLOGG CO.**
225 Broadway New York 7, N. Y.
att. Mr. Coyne, Room 1302

## Permanent Positions Open to ENGINEERS

. . . after training at full-time pay . . . as

**Consultants in Fire Protection Engineering**

to top U. S. and Canadian industry. Usual pension and other benefits. Excellent opportunities; fast-growing engineering organization.

*Write complete qualifications to:*
P-2807, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

## ELECTRICAL ENGINEER

As Assistant Superintendent for Midwest Municipal electric and water utility. Experience in design, planning, and operation of 2400/4160 volt distribution systems. Knowledge and experience in steam generating plants desirable. Age 32-40 years.

P-2880, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

**STRUCTURAL ENGINEERING**
ARCHITECTURAL ENGINEERING
OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. *Forty-first year. Write today.*
**WILSON** *Engineering Corp.*
College House Offices - HARVARD SQUARE, CAMBRIDGE, MASS.

**Permanent Positions Open to**
**ENGINEERS**
. . . after training at full-time pay . . . as
**Consultants in Fire Protection Engineering**
to top U. S. and Canadian industry. Usual pension and other benefits. Excellent opportunities; fast-growing engineering organization.
*Write complete qualifications to:*
P-2447, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

**CONCRETE INSPECTOR**
Location
**El Salvador, Central America**
Concrete inspection gravity concrete dam now under construction. Several years experience, 4"-8" aggregate necessary. Living quarters available. Duration of job about one year or longer. Reply, giving experience, photograph, salary desired, etc. to
**HARZA ENGINEERING COMPANY**
400 W. Madison Street Chicago 6, Ill.

## POSITIONS VACANT

(Continued from opposite page)

ENGINEER WANTED. Permanent position with highway construction firm in Westchester County. Must have experience to take charge of field engineering on highway construction projects. Also be able to do estimating in main office. The present projects are located in the New Jersey and New York areas. Write full qualifications, salary, experience, etc. P-2888, Engineering News-Record.

PROJECTS MANAGER'S Assistant—for office and field coordination, design and construction, process industry plants. Unusual opportunity in growing department of large and long established construction firm. P-2901, Engineering News-Record.

STRUCTURAL STEEL Detail Draftsmen and Checkers. All types of Structures. Vacation, group insurance, good working conditions. Only top quality men. Send complete written information. Bristol Steel & Iron Works, Inc., Bristol, Virginia-Tennessee.

WANTED IMMEDIATELY Superintendent thoroughly experienced to supervise on large canal and levee project in Southeast. Must be good organizer, producer, know men and equipment. Write stating qualifications. P-2925, Engineering News-Record.

## SELLING OPPORTUNITY OFFERED

SALES ENGINEER for large concern in construction field. Must have degree in civil engineering. Prefer person having experience in contracting engineers and contractors. Desire resident of Kentucky, as position is located in Louisville. RW-2740, Engineering News-Record.

## EMPLOYMENT SERVICE

SALARIED PERSONNEL, $3,000-$25,000. This confidential service established 1920, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L, 241 Orange St., New Haven, Conn.

## POSITIONS WANTED

CARPENTER FOREMAN or General Foreman 25 yrs. experience in the field. Can organize and manage any size job or crew. Age 45 yrs. Available January 1952. PW-2895, Engineering News-Record.

**ESTABLISHED 57 YEARS**
POSITIONS IN

| | |
|---|---|
| Engineering | Appraisals |
| Architecture | Chemistry |
| Manufacturing | Teaching |
| Contracting | Mining |
| Metallurgy | Sales |

Our many years of specializing in Engineering and Technical help enables us to number among our clients the most desirable employers and to place at your disposal a most attractive method of getting in touch with parties needing men of your qualifications.
**THE ENGINEERING AGENCY INC.**
53 W. Jackson Blvd. Chicago 4, Ill.
Room 1662 Harrison 7-4056

## POSITIONS WANTED

CONSTRUCTION EXECUTIVE: 46, New York Registration, with wide experience in planning, coordinating and directing the development and construction of industrials, public works and transportation facilities as Chief Engineer-Estimator and Contract-Construction Manager, is interested in a career job offering economic security. PW-2871, Engineering News-Record.

CIVIL ENGINEER: Consulting, Registered; 20 years experience—Sewerage systems, Water supply, Town Planning, Municipal Engineering Projects. Emphasis on connection of responsibility or future partnership possibility. PW-2870, Engineering News-Record.

CIVIL ENGINEER, registered. Age 47. 21 years U. S. and foreign experience on powerhouses, dams, piers, waterlines and sewers. Have made complete river basin surveys, structural plans and engineering reports. Best references. Available immediately. PW-2879, Engineering News-Record.

CONSTRUCTION MANAGER available Engineering education, have numerable contacts and broad experience in both domestic and foreign construction. Wishes permanent connections with responsible construction company who realize the importance of know-how and dependability. Age 45. PW-2866, Engineering News-Record.

CONSTRUCTION OR Projects Manager available February 1st, with years of diversified experience in all phases of heavy construction. Successful record contact negotiations. Familiar with CPFF and overseas contracts. If necessary can furnish well trained key personnel for both office and field. References furnished. PW-2926, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT & Engineer, twenty years practical experience on all types of buildings, bridges, heavy construction and architectural buildings, good organizer and knows costs, excellent references, prefers midwest location. PW-2864, Engineering News-Record.

SENIOR ENGINEER M.E. P.E. rich background welcomes opportunity to supervise design and construction of tank farms for growing organization. N. Y. area preferred. PW-2949, Engineering News-Record.

**MATERIALS ENGINEER**
22 years' experience in domestic and 4 overseas projects; airfields, highways, dams. Specialist in Soils Mechanics, Bituminous and Concrete; Supervision laboratory, field control and design. Combined technical and business training available to your organization.
PW-2921, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

**AVAILABLE**
Services of Architectural Firm practicing in San Francisco for 25 years. Available for correspondent or resident representative for private firms having Defense Building Contracts on West Coast. Office experienced in Public building and Government paper work. Professional record and references on request.
RA-2882, Engineering News-Record
68 Post St., San Francisco 4, Calif.

***AVAILABLE***
**GENERAL CONSTRUCTION SUPERINTENDENT**
Experienced in highway, airport, U. S. Flood control construction, also all types heavy construction wet dry and rock excavation, steel and concrete bridges, dams, subways, industrial building construction. PW-2892, Engineering News-Record.
*Write or Call*
**J. H. SMITH**
144 Westminster Rd. Rochester 7, N. Y.
Telephone Hillside 3472-J

## POSITIONS WANTED

CONSTRUCTION SUPERINTENDENT. Twenty-five years experience all types heavy construction wet dry and rock excavation, steel and concrete bridges, dams, subways, industrial building construction. PW-2892, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT or assistant, 30, grad. 5 yrs. exper. industrial, private & public works, will travel, car. PW-2929, Engineering News-Record.

EXECUTIVE ACCOUNTANT and Cost Engineer with eleven years construction experience. Am specializing in developing cost information for use in estimating. Have had both Professional and Private training in industry. Am seeking permanent assignment with unlimited opportunity. Am middle-aged. Present salary $650 per month. PW-2919, Engineering News-Record.

MASTER MECHANIC: Shovel oper., 30 years experience with heavy equipment, 8 years open pit mining, steam( diesel, electric. PW-2868, Engineering News-Record.

PROJECT MANAGER or Construction Superintendent. 20 years experience in Industrial and Governmental work. Excellent references. PW-2823, Engineering News-Record.

SUPERINTENDENT: 30 years experience industrial, power, dams, steel, cement mills, schools and hospitals. Frame cantonements. Cost conscious. Available Jan. 1st. PW-2934, Engineering News-Record.

REGISTERED C.E. Over 20 years engineering experience. Field and office supervision. Design and construction of earthwork, concrete-work, roads, bridges, sewers, etc. Desires new position. South, Midwest or Southwest preferred. PW-2738, Engineering News-Record.

SUCCESSFUL TOP Monumental building and heavy construction man presently in charge of all work for internationally known long established construction company desires immediate change. PW-2585, Engineering News-Record.

SUPT. TUNNELS, Open cut and extensive experience with Hard Rock. PW-2863, Engineering News-Record.

## BUSINESS OPPORTUNITY

**Professional Engineer**
in early thirties seeks active and financial participation with established construction company. Can offer contacts, capital, and experience. BO-2791, Engineering News-Record.

## SPECIAL SERVICE

**Divers, equipped and experienced**
for all underwater operations—Demolition our specialty. McAlinden Construction Co., Hopewell, New Jersey.

FOR SALE
**CIVIL ENGINEERING and SURVEYING BUSINESS**
Located in Chicago and grossing between $70,000 and $80,000 per year. Will pay three principals $10,000 annual income per person. $30,000 in records and field and office equipment. Asking $60,000. Terms can be arranged.
BO-2865, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

Auction Advertising—Page 106

EVERYTHING SOLD BELOW OR AT O.P.S. SEILINGS

**NATION'S LARGEST**
HEAVY CONSTRUCTION
**EQUIPMENT AUCTION**
**$2,000,000**

# AUCTION SALE

NEAR NEW and USED SHOVELS, CRANES, DRAG LINES, PULL SHOVELS
*Extra attachments for above*

TRACTORS
All makes, some with dozers, tractor shovels, pushers, booms, PCU's; and rubber tire tractors.

TRACTOR PARTS
including tracks

MOTOR SCRAPERS, DOZERS and PULL SCRAPERS, MOTOR GRADERS, PUMPS, ASPHALT EQUIPMENT, GENERATORS, GRAVEL EQUIPMENT, ROLLERS, LOW BOY TRAILERS, TRUCKS, tractor & dump, WINCHES, all makes TRENCHERS, all sizes and makes, BUCKETS, Clam, Dragline, Concrete MISCELLANEOUS, too numerous to mention

*ON DISPLAY 3 DAYS PREVIOUS*

**JAN. 21, 22**

V. F. W. BUILDING and 15 ACRES
13315 BROOKPARK ROAD

**CLEVELAND**
**OHIO**
2 MILES FROM MUNICIPAL AIRPORT

**SEND FOR COMPLETE LIST**

ADDITIONAL DESIRABLE EQUIPMENT ADDED DAILY.

*AUCTIONEERS • LIQUIDATORS*
**ROSS & ROSS**
BRidgeport 8766
101 First Ave. N. • Minneapolis, Minn.

## WANTED

2 heavy stiffleg or guy derricks, steel or wood, for clamshell work.
1 stationary concrete mixer, 1-yard capacity.
1 set batching bins for concrete mixer.
Orange peel, stone grabs and clamshell buckets.
Steel skips or scale pans.
Wire rope blasting mats.

W-2822, Engineering News-Record
330 W. 42 Street, New York, N. Y.

## WANTED

3 5 to 10-ton Guy or Stiffleg Derricks
2 3-Drum Electric or Gasoline Hoisting Engines with Swingers
1 2-yard Concrete Batching Plant with Mixer
2 Air Compressors about 500 c.f.m., Diesel or Electric Drive

W-2938, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

*Wanted*
**1 BUCKET AND BLADE**
For a TD9 International dozer

Box W-2927, Engineering News-Record
330 W. 42nd Street, New York 36, N. Y.

*For Sale*
**McKIERNAN-TERRY**
**S-8 PILE HAMMER**
With Leads
New 1951
**THRUWAY CONSTRUCTORS**
Port Byron, New York

## PILE HAMMER

Vulcan Model OR, 19,800± single-acting steam pile hammer. Standard base. Completely rebuilt in our own shops.

COAST EQUIPMENT CO.
948 Bryant St. San Francisco

**CLAMSHELL & ORANGE PEEL BUCKETS**
Sizes: ⅜ to 2½ cu. yd. capacity.
Good used condition.
G. A. BASS Birmingham, Mich.

## GATE VALVE FOR SALE

1—30" Vertical, geared Pratt & Cady gate valve with flanged ends. New in 1929 but never used.

THE WATER BUREAU
115 Boad Street Hartford 5, Conn.

## FOR SALE

1—Bucyrus-Erie 15-B Backhoe with shovel front attachment.
1—International TD 18 Bulldozer. Good condition.
1—MultiFoote 34-E Dual Drum Paver. Excellent
3—Jaeger 3-cu. yd. Truckmixers (mixers only). Good condition.
1—Allis-Chalmers Model AD 3 Motor Grader with cab and scarifier. Completely rebuilt.
1—Blaw-Knox 20-25-ft. concrete finisher. Used 3 days.
1—Caterpillar D-4 Bulldozer. Fair condition.

**D. D. KENNEDY, INC.**
Manheim Road (U. S. 45) at Madison St.
P. O. Box 278, Bellwood, Illinois
Phone: (Chicago) ESTebrook 8-5223
(Suburban) Hillside 2520
2605 Huffman Blvd. Box 238, Rockford, Illinois
Phone: Rockford 5-8759

## SEARCHLIGHT SECTION

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Adnum Pavers (converted to stone spreaders), machines in nearly new condition, spread to 12 ft. Location New Jersey.

Three Wheel 10 Ton Galion, Buffalo-Springfield and Huber rollers, gas or diesel engine.

Tandem 10 to 12 Ton Galion rollers, gas or diesel.

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28' centers, 18" wide belt.
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4 Steam piledriving rigs.
Steam boilers and leads.
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**Birmingham, Michigan**

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# FOR SALE

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1—3000A Manitowoc, Hy Front, complete.
1—3000A Manitowoc, Standard Front.
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1—Koering, 304 Crane boom.
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1—Lorain 82, shovel, crane, drag and backhoe attachment.
1—Bucyrus-Erie 37B, shovel, crane or hoe, equipped with 13000 Cat. engine, duty free to Canada.
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Backhoe attachment for B.E. 22B.
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***TRACK ACCESSORIES***

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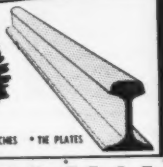

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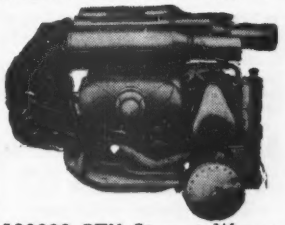

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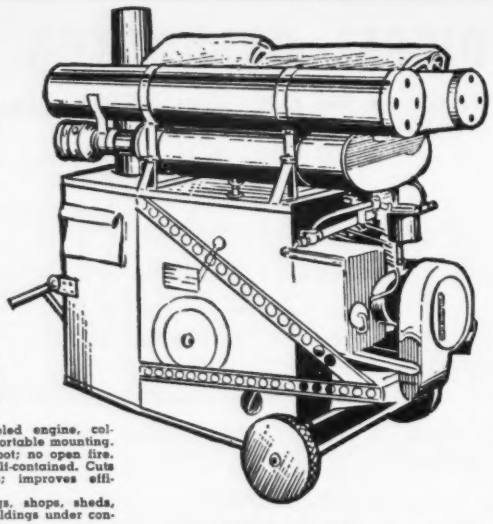

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*Excellent condition*
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| FLANGED PIPE— | 4 inch |
| | 6 inch |
| | 8 inch |
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Birmingham, Michigan

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### Subject to Prior Disposition
### Complete Earthmoving Outfit

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30 ft. 30" C.I. Class C Pipe
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**2 Cubic Yard Capacity**
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# Krilium . . .

## . . . something new in soil treatment

On Dec. 29 in Philadelphia Monsanto Chemical Co. presented Krilium, a substance that may solve many of construction's soil problems.

Applied to silts and clays, Krilium causes the particles to "agglomerate" forming a pebbly structure that resists several undesirable water effects normally expected in such soils.

Slope erosion control is the construction application that Monsanto engineers have been testing, but they are speculating on other uses.

For slope erosion control the objective is to hold the slope until grass or other cover gets a good start. Krilium is applied to the new-cut surface as a water-and-powder slurry. It quickly forms a pervious film of mutually-attracted particles.

When rain comes, the treated particles resist their natural tendency to slake, or to go into water suspension, where they would be readily carried down the slope with the flowing water.

Rain-effect experiments on earth slopes at Monsanto's Central Research Laboratory in Dayton, Ohio have shown that a rain that would erode 33 tons per acre of a given untreated soil from a given slope would erode only one ton per acre of treated slope under the same conditions. Experiments also show that seeds germinate and grow at a normal rate on the treated slope.

The treatment rate in these experiments is one pound of Krilium per 100 sq ft of soil. Krilium now is available for experiment only, but it is expected to be produced on a commercial scale by 1953.

The price is expected to be about $2 a lb. This would make the cost of protecting an acre almost $900, an amount that in most areas is not competitive with straw-mulch slope treatment. However, new experiments are expected to prove that the application rate can be much lower than a pound per 100 sq ft.

Application costs can be quite low. In Connecticut, the State Highway Department has experimented with a spray system that enables the application of Krilium, grass seed and fertilizer—all water-borne—at the same time. This rig can spray an acre in 20 minutes. (Krilium is organically inert, so plant nutrients must come from other sources.)

Mixed in with the soil, Krilium yields demonstrated agricultural benefits that might also have construction-benefit applications. It improves aeration and the percolation of excess water. It acts like a sponge with the remaining water, creating a stability that is absent in natural clay and silt soils.

When wetted, the natural soils slake, the fines quickly clogging the subsurface pores and slowing percolation. Later, when the soil dries it gets a hard surface and shrinks with large cracks on the surface. This condition makes it difficult for seedlings to break out through the surface.

Treated soil, in which there is little volume change, and the structure remains granular after drying, is favorable medium for plant growth.

The properties that make for better plant growth also may help in some construction conditions. Consideration is being given to applying Krilium to soil stabilization for roads and airports. Also in prospect are studies of the material's effects on soil load-bearing capacities under varying conditions. MONSANTO CHEMICAL COMPANY, ST. LOUIS 4, MISSOURI.

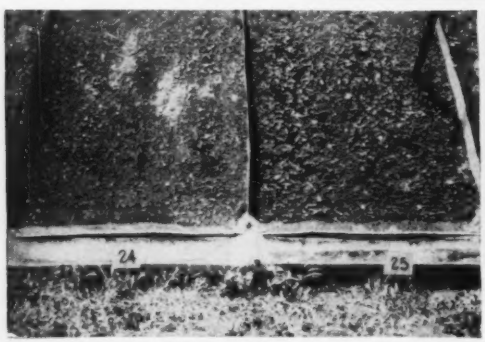
### Other available chemicals for soil treatment

- **Furfural—U. S. Navy Bureau of Yards and Docks has used it, usually in conjunction with bitumen or aniline, for increasing the bearing value of sand. Quaker Oats Co., Cedar Rapids, Iowa, sells it for $0.105 a pound, in tank car lots.**
- **Silicate of soda—Used in conjunction with a calcium chloride solution, it solidifies sandy soils. Chemical Soil Solidification Co., Chicago, Illinois, says the cost range is from $1.50 to $3.25 per 100 lb.**
- **Calcium acrylate—Developed for U. S. Army Engineers, it imparts a stable, rubbery surface to wet, clayey soils. Used in conjunction with materials such as sodium thiosulfate and ammonium persulfate. B. F. Goodrich, Chemical Division, Rose Building, Cleveland, Ohio, manufactures it. Price unknown, but considered expensive.**

## Chrome-Lignin soil process

Waste sulfite liquor from the paper industry has been used for years as a dust palliative and for temporary stabilization of secondary roads and highway shoulders, but its value has been limited by its water solubility. Recently the Chrome-Lignin process, developed under Army Engineer Corps sponsorship by B. K. Hough and J. C. Smith (below) at Cornell U. shows promise of making sulfite liquor a

(*Continued on page 116*)




**COMPARATIVE RESULTS of 6 in. of rain on two soil plots revealed plot at left, treated with Monsanto's Krilium at rate of 1 lb/100 sq ft, lost topsoil equivalent to 1 ton per acre. Untreated plot at right lost equivalent of 33 tons per acre.**

**CHROME LIGNIN—Here Professor J. C. Smith (left) and R. K. Hough of Cornell University admire their handiwork—hard briquettes made from soil and bichromate. Testspieces remained submerged for months without disintegration. (Acme)**

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4. CRANE WHEELS
Here, unprotected and hard-faced crane wheels are compared. Note wear evident on flange of unprotected wheel, left. Stoody 105 has held size on wheel at right.

5. BRAKE DRUMS
Surface of this brake drum is automatically hard-faced with Stoody 105 and subsequently machined. Resulting smooth surface far outwears unprotected drum.

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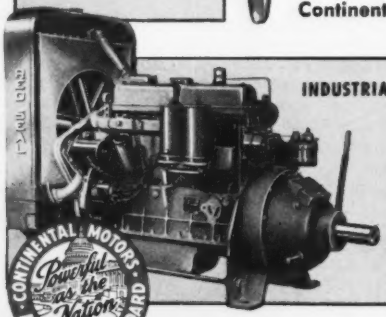


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## New products . . .

really effective soil solidification agent.

The process is based on the well-known reaction of sulfite liquor and sodium or potassium bichromate to form a water-in-soluble gel even from dilute water solution. The addition of 3 to 10% of concentrated sulfite waste and much smaller quantities of bichromate imparts considerable cohesive strength to soils, and makes them almost impervious to water. The additive is effective in a wide variety of soils, ranging from beach sands to heavy clays, and is not adversely affected by organic contamination in the soil. With fine-grained soils, at least part of the stabilization is thought to result from chemical bonding of the lignin derivative through the chrominum to the surface of the soil particles.

Laboratory and field tests have shown that the process shows promise for stabilization of highway subgrades, production of synthetic aggregate by soil briquetting, and stabilization of loose dry beach sand by penetration methods. For wet soils it makes use of dry mixed powders of concentrated sulfite waste and potassium bichromate; for stabilization by penetration methods lignin liquor and solutions of sodium bichromate are used. The costs are roughly competitive with soil cement stabilization, but the process is effective where soil cement very often is not.

### Revolutionary sprinkler protection with T-head

This Rockwood T-head has been engineered and designed for use in fixed piping systems. It has a directional wide angle, medium velocity discharge, and is installed in a pendant

(Continued on page 118)

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*(Job: Georgia State Dept. of Agriculture Building, Augusta. Roofing contractor: R. R. McCall Co., Valdosta, Ga.)

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## New products . . .

position, generally recommended for automatic as well as open deluge use.

The head can be used either sealed or open. The sealed head combines the principles successfully developed in the company's WaterFOG with the sturdy construction of their figure 4 fusible element in the regular sprinkler head.

The design of the T-head breaks up water into a fog pattern fine enough to completely fill the area from ceiling to floor and heavy enough to drive particles down to any floor fire.

If the fire starts on the floor, hot gases mushroom up in an inverted cone. This head has a wide angle distribution without voids in the area near the ceiling, thus it prevents gas and flame from rising and also prevents them from mushrooming and needlessly opening adjacent heads. Rockwood Sprinkler Company, 38 Harlow Street, Worcester 5, Mass.

### Fully-automatic welding head

This is a new automatic welding head which controls welding and positioner operation automatically as well as operation of the high-frequency pilot circuit if one is used. The electromechanical control circuit automatically stops both head and positioner drives if the arc is broken or the electrode sticks to the work piece. Designated as the Mir-O-Col Model 944, its head driving motor operates on either or both the welding voltage or a separate 110-volt source. It is electrically independent of the positioner and welding transformer power supply, completely eliminating phasing problems. The motor drives the feed rolls through a specially designed gear reduction train. All gears and bearings are readily accessible and can be replaced on the job by the average mechanic without any special tools. Electrodes from $\frac{1}{16}$ to $\frac{1}{8}$ in. can be ac-

(Continued on page 121)

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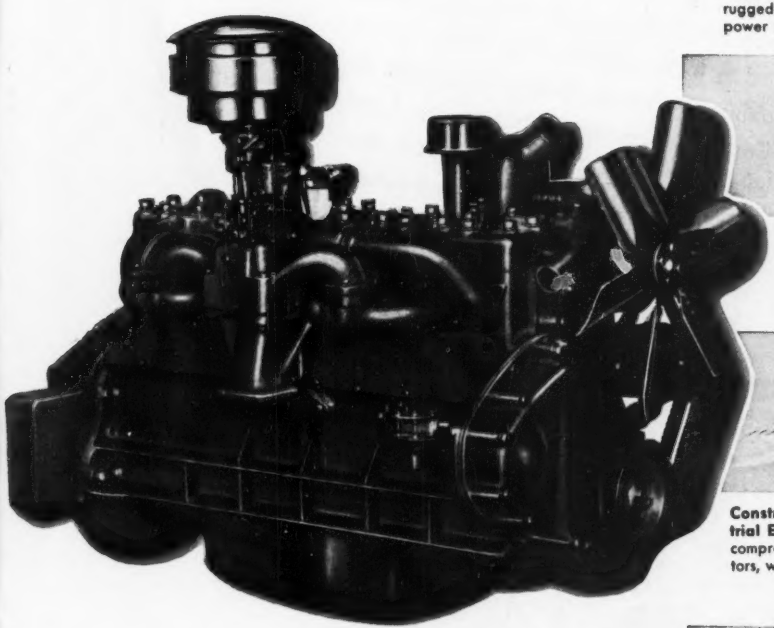

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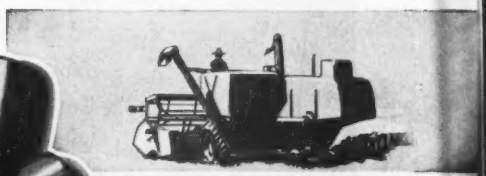

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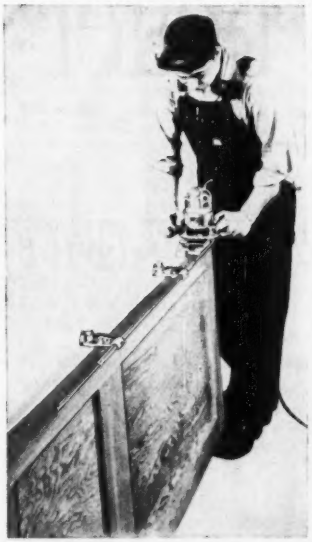
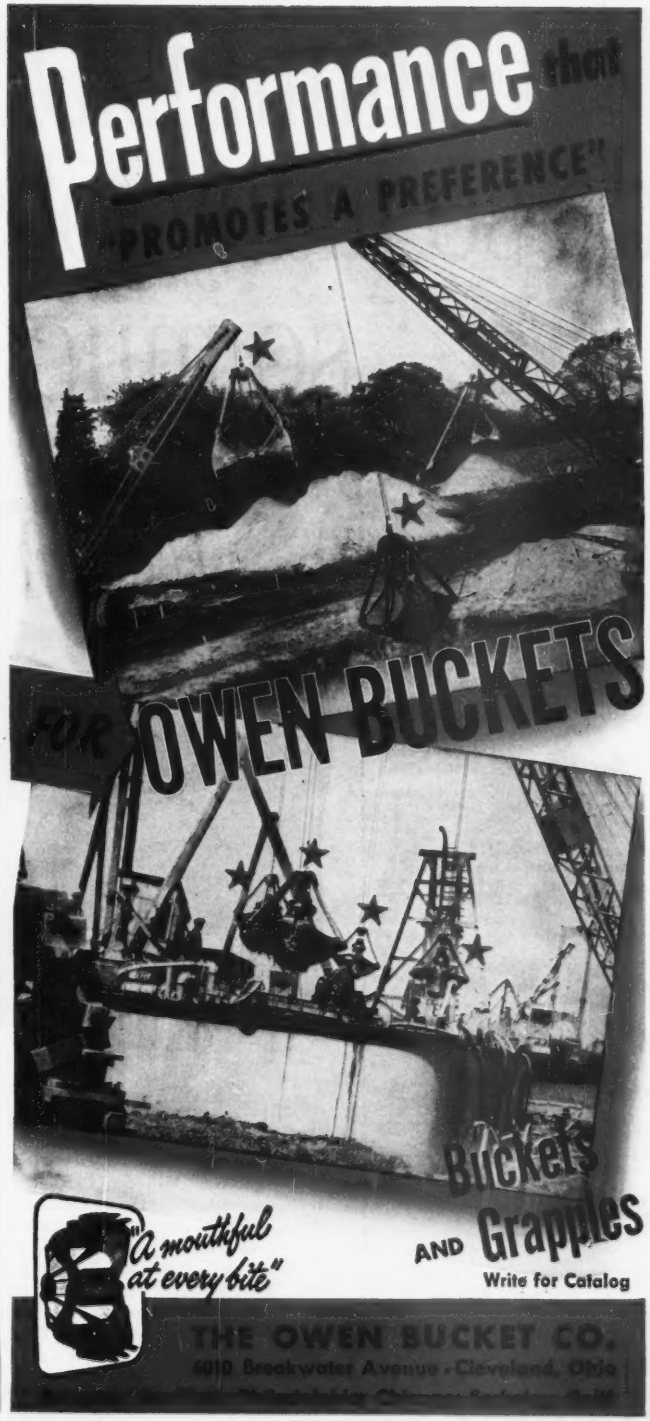


## New butt templet for hanging doors

Carpenters can now save hours of tedious labor involved in cutting hinge butts for doors and jambs. During recent tests butts were mortised in 1½ minutes with this new templet, Model 5006, designed for use with the company's router.

The templet is adjustable for 2½ to 5½-in. hinges and also adjustable for two or three butts on either doors or jambs. After it is adjusted for size of the door and size of the hinge to be mounted, the templet is locked in position on the door or jamb. Then a few strokes of the router produces a clean, neat mortise, except for the corners which are taken care of with a special corner chisel. Weighing less than 4 lb., the templet is 1¾ in. high, 4 in. wide and 63 in. long when fully extended. It collapses to fit into a metal carrying case. PORTER-CABLE MACHINE COMPANY, DEPARTMENT PR-2, SYRACUSE, N. Y.



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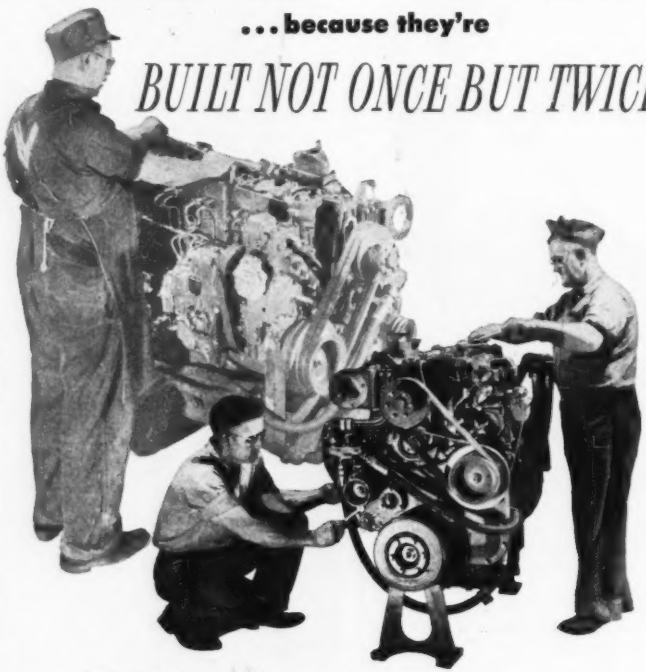

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## MANUFACTURERS' PUBLICATIONS

**"See Better–Work Better"**—This is the title of a series of publications being published by General Electric. The first five of the series are now available. They include such items as inspection lighting tips, proper lighting of offices and plants, lamp maintenance, installation of warning lights, grid pattern lighting, candlepower and dozens of other subjects. Available from the LAMP DIVISION, GENERAL ELECTRIC COMPANY, SCHENECTADY, NEW YORK.

**Duplicating Machines and Supplies**—Systems Release No. 27 and No. 28 describe, respectively, the Ditto Payroll System at S & W Construction Company, Memphis, Tenn., and Ditto Order-Invoice-Production-Back Order System at Industrial Nut Corporation, Sandusky, Ohio. Drawn up in 6- and 8-page folders, respectively, they show the step-by-step preparation of master payrolls, payroll summaries, checks, etc., along with testimonial letters from the companies concerned. DITTO INC., HARRISON AT OAKLEY BLVD., CHICAGO 12, ILLINOIS.

**Non-Clogging Sludge Pumps** – this new bulletin (206-4) describes the non-clogging sludge pumps put out by Lawrence Machine and Pump Corporation. The 8-page folder explains in detail the casing, impeller, shaft, packing box, bearings, etc. of the pumps as well as a table which explains dimensions, capacities and diameter of solids that the pumps will pass. LAWRENCE MACHINE AND PUMP CORPORATION, 371 MARKET STREET, LAWRENCE, MASSACHUSETTS.

**Soil Compaction** – Detailed information, including useful new production data, for figuring work schedules and costs on soil compaction jobs is contained in a new bulletin just published by the makers of the Barco Rammer. Of special interest to builders, contractors, supervisory engineers and project managers is a discussion of the use of "soil compaction" as a means of attaining (1) greater permanence, (2) lower costs, and (3) earlier completion dates on many construction projects.

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# Student program fosters contractor-engineer relations

A Student Encouragement Program is playing a major role in the Alabama Road Builders Association's plans to improve engineer-contractor relations. It is also carrying the engineer-student's training a step beyond the classroom.

Starting modestly as a group of informal talks the student program has grown for the past two and a half years. Today it consists of four phases including regular talks by working contractors, annual awards to outstanding engineering students, a summer work program and a financial aid scheme.

• **The start**—Foundation of the program was laid when Ed N. Rodgers, manager-engineer of the Association, gave a series of informal talks to engineering students at Alabama's two engineering schools, University of Alabama and Alabama Polytechnic at Auburn. His purpose was to give the student the contractor's side of the story.

At one of these early talks John T. Moss, a civil engineering graduate of Purdue and a Birmingham contractor, accompanied Mr. Rodgers to Auburn. After two hours of talking and answering student's questions Mr. Moss was enthusiastic about the plan. And it marked the beginning of regular talks by working contractors to engineering students. Given quarterly at both schools they form one phase of the program. Mr. Moss has remained active in the program ever since and serves as chairman of the central operating committee.

The following year the next step in the program was taken. The Association voted to honor the outstanding civil engineering student annually at each school. The choice was to be based on personality, student activity and scholarship. The Road Builders emphasized that judging should not be based on scholarship alone.

• **Work program**—1950 was also the year the program established its broadest and most important phase. A summer work program was started to act as a supplement to class room education. The plan would give the student both practical experience and the chance to judge which phase of civil engineering was most suitable to him.

To participate, the student makes written application to the faculty member of the selection committee and agrees to work a minimum of ten weeks each summer of his college course barring illness or military service.

Selection is competitive and students are graded by the engineering faculty of his college and the association's committee. Scholarship counts 40%, outside activity and leadership, 30%, and results of a personal interview, another 30%, toward acceptance.

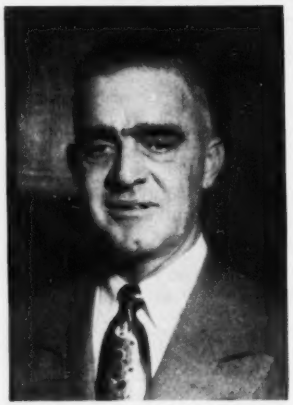
Following his selection a student is assigned to a sponsoring firm that has agreed to rotate him in various departments giving him the broadest experience possible during the ten-week period. Under the program the student is employed and paid in accordance with minimum wage laws or merit board regulations.

During the summer the student is contacted at least twice by Mr. Rodgers, or a member of the committee on rules, who checks his progress. At the end of the Summer the student is rated by his sponsor for thoroughness, accuracy, capacity, cooperation and initiative. Scoring is either outstanding, excellent, good, fair or not satisfactory. A rating of satisfactory must be maintained in both class and on the job for the student to continue in the program.

If the student follows the program for three summers he has the opportunity to work in engineering, contract construction and for an industry furnishing materials and equipment for construction work. But he is not permitted to work more than one summer with the same sponsor.

**Keys are awarded by the Association to all students successfully completing each Summer of work. On completion of the full program he is awarded a gold key which entitles him to the full facilities of the Association in finding employment after graduation.**

In the first summer of the program's operation 34 students were placed. The Alabama State Highway Department took ten students. Birmingham and Montgomery took one each in their engineering departments, and the counties of Geneva, Baldwin and Butler did the same. Others were placed with contractors and equipment and materials dealers. Last summer 23 students completed assignments with sponsoring firms.



JOHN P. MOSS, central control committee chairman of the Student Encouragement Program.

• **Financial aid**—Last year the Student Program activated its fourth phase by establishing a financial assistance fund for students needing small loans to continue their education.

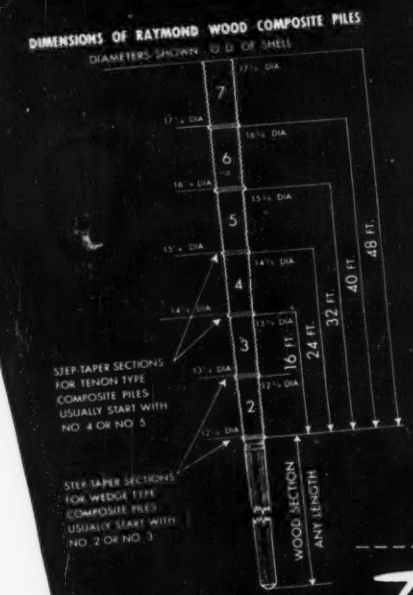
The association began with a deposit of $5,000 with the understanding that it would be increased if necessary. Aid is limited to a maximum of $1,000 to a single student during his college career and applications for loans are only open to those who have established themselves in the summer work program.

This is the program as it stands. Both the association and the students feel it is working to satisfaction but changes are expected. The program will be expanded or revised as the need arises. But the Road Builders feel they are accomplishing their original aim through the program with the additional satisfaction of helping the State's engineering schools turn out better engineers.

# Raymond MAKES 5 TYPES OF CONCRETE PILES

**1. STANDARD . . . 2. STEP-TAPER . . .**
**3. PIPE STEP-TAPER . . . 4. COMPOSITE**
**5. GOW CAISSONS**

Raymond installs every type of pile: cast-in-place concrete, precast concrete, steel pipe, wood and H-beam. Raymond operations include underpinning, borings and soil investigations, waterfront construction and harbor and river improvements, shipbuilding facilities, also cement-mortar lining of water, oil, gas and chemical pipelines, 4" to 144" diam's., by Centriline Corp., a Raymond subsidiary.

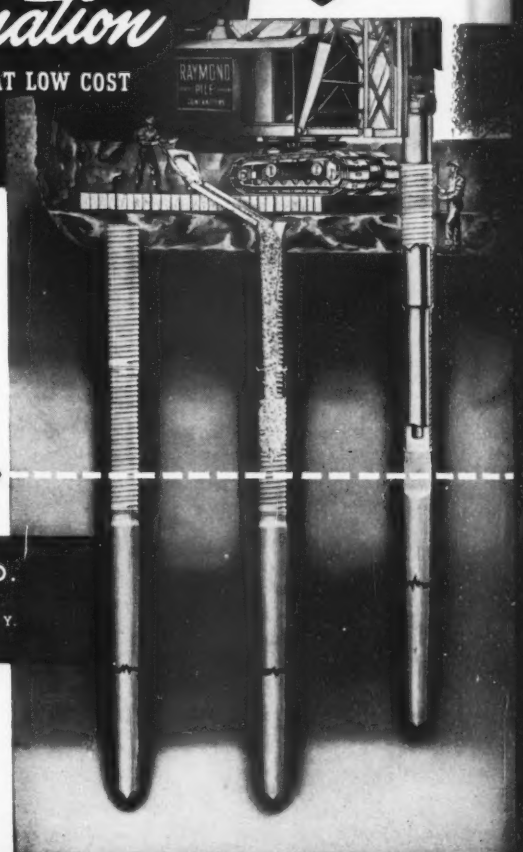



## 4. COMPOSITE PILES

## *The right combination*

**FOR LONG LENGTH AT LOW COST**

*Right, driven wood pile is being followed down by pile shell of concrete section. Center, complete pile driven to resistance, pile shell is being filled with concrete. Joint, wedge-type with sealing ring, is below ground-water level. Completed pile is shown at left.*




Raymond Composite Piles are used for economy and long length. The concrete upper section extends from the permanent water table up to the underside of the footing, thus eliminating the expensive excavation, sheeting and pumping often required with wood piles.

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# IT STRIPS COSTS TOO
# with help of TIMKEN® bearings

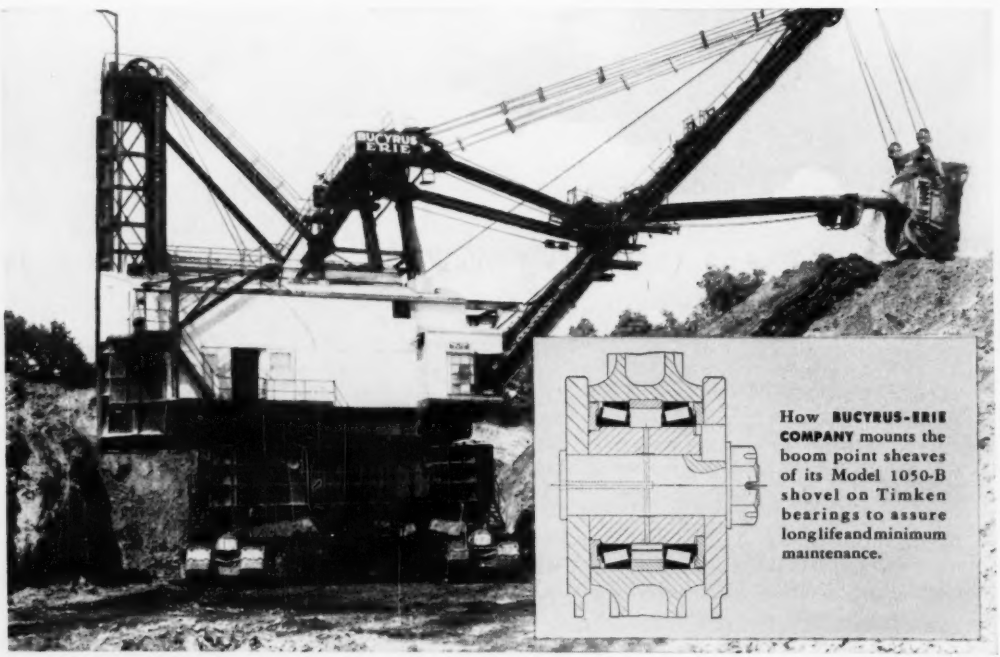
SHOWN here is a Bucyrus-Erie Model 1050-B shovel stripping overburden from a coal bed. It strips *costs* too—by staying on the job for long periods of time without requiring time-out for repairs or maintenance.

One of the ways Bucyrus-Erie Company builds this trouble-free performance into its shovels is by using a total of 30 Timken® bearings in the swing machinery, main machinery, crowd machinery, counter weight hoist and boom point sheaves.

Timken tapered roller bearings have exceptional load carrying capacity because of line contact between rollers and races. Since they take radial and thrust loads in any combination, Timken bearings hold shafts in rigid, positive alignment. Gears mesh properly, sheave alignment is assured.

Timken bearings give years and years of trouble-free life because they're engineered for the job, precision manufactured and made of Timken fine alloy steel. Be certain Timken bearings are in the equipment you build or buy. Look for the trade-mark "Timken" on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO."

*This symbol on a product means its bearings are the best.*






How **BUCYRUS-ERIE COMPANY** mounts the boom point sheaves of its Model 1050-B shovel on Timken bearings to assure long life and minimum maintenance.

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The special grade alloy steel which gives Timken bearings their strength and resistance to wear is made in our own steel mills.

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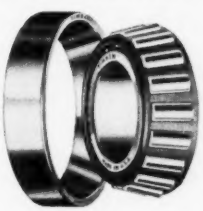
***TAPERED ROLLER BEARINGS***



NOT JUST A BALL — NOT JUST A ROLLER — THE TIMKEN TAPERED ROLLER — BEARING TAKES RADIAL AND THRUST — LOADS OR ANY COMBINATION